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THE EDITOR'S PAGE

Attacking the Two Solitudes

During the past 10 years, research in education has undergone dramatic change. The popularity of operationalism has been yielding to a more responsive, interpretive way of studying educational phenomena. New journals are springing up to accommodate researchers who pursue their work in these ways with the result that there is a developing sense of methodological isolation. Unwittingly, *The Alberta Journal of Educational Research* may be contributing to the "two solitudes" of educational research. Based on the kinds of articles that are submitted, I believe that *AJER* is seen as an outlet for the numerical approaches to educational research. For several reasons this is unfortunate. In this longer-than-normal editorial, I would like to propose a new agenda for *AJER*.

Education as a social institution involves millions of Canadians and billions of dollars, yet there are fewer than 500 people who are engaged in continuous, serious, and systematic study of the field. Moreover, their efforts are divided into dozens of subspecialties, so that at any time the research attention being paid to a particular issue is very small. To further divide this on the grounds of method has the effect of partitioning an already too small work force.

The nature of competence is such that whether you are an ethnographer, a feminist interpreter, or a factor analyst, the apprenticeship that must be served is so long and intensive that it seems to preclude multimethod competence within a single researcher. In addition, the best researchers in any field are usually passionate believers in the correctness of their own stand, and as human beings they are naturally drawn to like-minded souls. Consequently, it is not surprising to find lines of research proceeding in parallel tracks that are insulated from the influence of each other. Research on classroom instruction is a splendid example. Despite this, the consumer of research has much to gain from an awareness of the literature that derives from various frameworks.

Being confronted by different perspectives encourages debate and reintegration within a field. In my own area, educational measurement, the criticisms of social philosophers and curriculum theorists have led to new topics of research interest (for example, test bias) and to new ways of thinking about old ones (for example, validity). In turn the measurement people are contributing to educational policy and teaching practice. The debates are not always peaceful, and they may not always convince individual proponents of a particular perspective. The history of educational inquiry tells us that no group has exclusive rights to wisdom no matter how convincing their arguments may appear in the immediate context. Evidence, analysis, criticism, and experience inevitably produce cracks in the position. To be effective, the debate among competing ideas must be heard by those who are involved in doing the research and by those who wish to use it. It is

simply not functional to isolate studies of educational phenomena on grounds of method.

AJER can facilitate the debate in two ways. First of all we (the board and I) invite researchers from all perspectives to send us the products of their investigations. In the past I may have been less than careful in finding reviewers who had the necessary breadth of experience and the tolerance of perspective to provide a helpful review for a particular paper. The outline provided for use by reviewers has often been "not quite appropriate" for the task, with the result that a message may have been sent to the effect that *AJER* is interested only in a particular kind of article.

Dimensions for assessment will now stress context, conceptualization, clarity, coherence, and contribution. The questions will be: What is the purpose of this paper? Is there a point of view being developed? Are the arguments persuasive? Do the conclusions or positions follow from the arguments, analyses, and evidence? Are they expressed in a way that the reader can understand and respond to even though he or she may not be in the area of specialization? Does the paper make a contribution? Does it provide some insight into the nature of educational phenomena?

Previously there was great emphasis on specification of research design, method of data collection, and type of analysis. Now this falls within the general notion of validity of argument. If a writer makes a claim based on experimental evidence, then the logic of the study must support the claim. If the claim is being made on the basis of conceptual analysis, then the logic of that analysis will be examined. Reviewers will be invited to ask the questions: What does the writer mean, and how (or why) does she or he come to those conclusions?

The second way in which *AJER* can encourage a richer approach to understanding educational research is to encourage more special issues. At the moment, each issue contains a collection of articles from many domains. This is a necessary consequence of a relatively small number of researchers working in many fields. However, by providing an opportunity for a single outlet for several connected papers, we can provide better service to both the readers and the writers. Articles in single topic issues will undergo an independent review process, and then a few members from the editorial board will be asked to examine the set of articles for coherence. It is hoped that organizers of single topic issues will use this opportunity to bring together researchers from several perspectives.

From the reader's point of view, these changes should be beneficial. Articles from different methodological persuasions will provide a more accurate portrayal of the diversity of our field. Single topic issues will offer an efficient way of finding out about a particular line of educational thought. Because the research community is so thinly spread, every effort will be made to aim each article at the knowledgeable (but not necessarily expert) educational scholar. The members of the editorial board hope that these changes will encourage debate and facilitate the drift of ideas across boundaries of method. The reward will be sharper arguments and deeper insight.

T.O.M.

The Alberta Journal of Educational Research *Vol. XXXV, No. 4, December 1989, 269-282*

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A Process-Based Approach to the Remediation of Spelling in Students with Reading Disabilities

Aspects of Das and Conway's (1986) remedial program CAP (Coding, Attention, and Planning training) were combined systematically with a spelling program designed to reflect the same global cognitive processing strategies. Daily intervention, consisting of training in both the global tasks and the specific spelling tasks, was provided for 10 learning disabled students with particular deficits in spelling, to a total of 20 hours of remediation. Ten matched, learning disabled students received 20 hours of the normal classroom remedial spelling program. Following remediation the experimental group performed significantly better than did the control group on the K-ABC sequential subtests, selected CAS planning subtests, and the Test of Written Spelling (Larson & Hammill, 1986). Results are discussed as supportive of an appropriate and viable remedial option for spelling with learning disabled students.

Some children are just born poor spellers. (Flaro, 1985, p. 4)

The ability to spell well is a gift from God. (Lerner, 1981, p. 337)

The above suggestions typify the attitudes of many educators regarding the ability to spell. The implication is that spelling ability is innate, and as such the onus on educators to influence the success of their students in this area is certainly lessened. It has been noted by several researchers that teachers spend relatively little time teaching spelling, particularly when compared with an area such as reading, and that often techniques for teaching spelling are disregarded even when they have been empirically validated (Gerber & Hall, 1987; Wallace & Larsen, 1978). Yet spelling ability, or lack of such ability, can influence a child's total school experience, affecting as it does one's ability to communicate in written form (Hammill & Noone, 1975; Wallace & Larsen, 1978).

The close relationship between reading and spelling is reflected by the fact that most children who experience reading difficulties invariably have dif-

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ficulty learning to spell (Gerber, 1984; Rieth, Polsgrove, & Eckert, 1984; Wong, 1986). Such children with specific learning disabilities are particularly vulnerable to the emotional burden of their academic deficiencies, and the related lowering of self-esteem, in that "incorrect spelling often creates an unfavorable impression beyond its true significance" (Otto & McMenemy, 1966, p. 203). It thus seems vital that attention be given to remediation of a skill which may otherwise persist as a serious problem with children who are already struggling with learning problems in areas such as reading.

Initially, traditional spelling programs were the only viable option available for the reading disabled student. The majority of these programs reflected a linguistic theory wherein emphasis was placed on the teaching of phonology, morphology, and syntactic rules (Hammill, Larsen, & McNutt, 1977). For most reading disabled students, these programs proved to be ineffective. More recently there have been several attempts to gain a "process-based" understanding of spelling and its remediation in learning disabled students (Englert, Hiebert, & Stewart, 1985; Gettinger, 1985; Kaufman, Hallahan, Haas, & Boren, 1978; Wong, 1986), but the results to date remain equivocal.

The objective of the present study was to design and test instructional procedures that would facilitate spelling ability in students with reading disabilities. The procedures were based on the cognitive processing model of Das and colleagues at the University of Alberta (Das, Kirby, & Jarman, 1975, 1979).

This "information-integration model" involves an integration of neuropsychology and information processing psychology, and within the model the conceptualizations of Soviet psychologist Luria (1970, 1980) have been used to describe three global but interactive cognitive processes: coding, attention, and planning. Coding involves the manner in which information is organized by the brain, successively and/or simultaneously, and is largely accomplished within the temporo-frontal and occipito-parietal cortex. Empirical evidence for successive and simultaneous processing has been generated in a large set of studies in which the performance of normal and disabled children on a diverse set of cognitive measures has been factor analyzed (Das et al., 1979). Similar processes have also been described by cognitive psychologists, for example, Neisser (1976). The attention component of the model includes arousal, a subcortical function, as well as modulation of arousal regulated via the frontal cortex in concert with subcortical processes. Planning, the third component, is broadly defined as the generation, selection, and execution of programs, either conceptual or behavioral. Kirby (1984) has identified at least four factors within the planning domain including search and metacognition.

Based on the information integration model, Das and his associates have developed a cognitive approach to remediation founded on three premises: (a) children learn most effectively by dynamically interacting with adults and peers; (b) remediation is most effective when done from a theoretical perspective in which the cognitive processing of children is related to the processing requirements involved in learning academic skills; and (c) trans-

fer of learning will be maximized if general, nonthreatening tasks are combined with academic bridging tasks. Support for the first premise of dynamic interaction is provided in the writing of Vygotsky (1962) and Feuerstein (1979) and in the research of Tizard and her colleagues (Tizard & Hughes, 1984). Empirical support for the second premise of the remediation model, that global cognitive processes (successive and simultaneous coding, attention, and planning) related to academic skill processes can be used to effectively remediate skill deficiencies, is provided by a series of studies done over the years by Das and associates (Kaufman & Kaufman, 1979; most recently through development and use of the Coding, Attention and Planning [CAP] remediation program by Das & Conway in 1986) and by independent investigators (Garofalo, 1986; McRae, 1986). Finally, support for the third premise of the remedial model, that academic bridging tasks may enhance the transfer of global processing to academic skills, is found in the writings of Douglas (1980), Kirby (1984), and Leong (in press).

Based on the above premises, the model for spelling remediation within the present study was developed through an extension of aspects of the global CAP program (Das & Conway, 1986). In particular, specific bridging tasks involving spelling were created to accentuate transfer of successive coding skills to spelling ability. Because, as described previously, both successive and simultaneous coding, and attention and planning dimensions are implicated in all cognitive tasks, it was of interest to examine marker task results in each area as pretest/posttest measures. Unfortunately, at the time of the present study the "attentional" marker tasks were under extensive revision, and the focus was limited to an examination of scores for coding and planning. Actual remedial training focused on successive coding, following indications that initial spelling relies heavily on successive strategies (Brailsford, Snart, & Das, 1984), but it was felt that related improvements in other areas of cognition were possible, and worth noting. The remedial training aspects of attention and planning were addressed through the specific and directed verbalizations with students. Strategy training for the reading/spelling disabled students involved five CAP tasks which focused on successive processing, and five spelling tasks which were developed to reflect the principles and skills underlying each CAP task. Following remediation it was hypothesized that the experimental students would exhibit substantial improvements in spelling ability and improvements on successive coding tasks. Pretest and posttest results for planning and simultaneous coding were examined on an exploratory basis.

Method

Subjects

Twenty learning disabled students in two special classes in the Edmonton Public School system served as participants in this study. The criteria for inclusion in a learning disabilities class within the Edmonton Public system consist of an IQ within the average range or above (WISC-R), and academic achievement in at least one area of more than two years below the expected level on standardized measures.

The students' ages ranged from 8 to 12 years, and WISC-R IQ means for each of the two classes ($N=10$ per class) were within the average range. English was their native language, and they did not have either visual or auditory impairments. Means for age, IQ, and Schonell Spelling Inventory for each class are presented in Table 1 (t-tests comparing these means in each case revealed no differences between the two groups). Schonell test results were readily available through school files and provided initial data for group selection, though the more detailed analyses of spelling skills provided by the Test of Written Spelling (Larson & Hammill, 1986) were utilized in pretest/posttest comparisons. The students were also two or more years behind their age peers in reading achievement. One class of 10 students served as a control group who received the typical classroom remediation in spelling, while the other class received an equivalent number of hours of the experimental remedial program and no other intervention in spelling during this time period. When students from either group were absent they were given "make-up" hours of the appropriate spelling remediation. In both cases the "instructional word list," comprising those words used for remedial purposes, consisted of 39 words from grades 1 through 5 which had been carefully selected by the teachers from the lists constructed by Thomas (1974), and which were felt to be representative of words most frequently misspelled by Alberta schoolchildren.

Pretest and Posttest Battery

The pretest battery was administered during January and the posttest battery during April of the same year. In each case the testing was conducted in a quiet setting in the child's school. Tasks chosen as pretest and posttest indicators included spelling tasks which were felt to be valid and reliable indicators of spelling skills in elementary-aged students in Alberta, and marker tasks for coding and planning. The latter marker tasks in the planning area are those which Das & Conway (1986) also used in pretest and posttest studies of the CAP remediation program of global cognitive functions. Though the planning marker tasks and marker tasks for coding and attention are currently under development by Das and colleagues as the

Table 1
Means and Standard Deviations for Age, IQ, and Schonell Spelling Inventory for Experimental and Control Groups

	Control Group	Experimental Group
Age in months	127.70 (7.24)	128.10 (15.73)
IQ	92.50 (9.06)	93.20 (8.32)
Schonell Spelling Inventory (Grade score)	2.50 (0.67)	2.30 (0.81)

Cognitive Assessment System (CAS, Naglieri & Das, 1987, 1988, in press), a decision was made to utilize tests for successive and simultaneous processing which had previously been published within the same theoretical framework and were better known at this time (Kaufman & Kaufman, 1983). Pretest and posttest tasks included the following:

Spelling Tests

1. & 2. *The Test of Written Spelling (TWS-2, Larson & Hammill, 1986)* was administered to the students in a group setting. This test is divided into two subtests to accommodate the theory that a child learns to spell in two ways. First, the child learns to apply rules and generalizations, and second, the child must rely on memorization skills. The former is instrumental when learning words that conform to the rules (i.e., "predictable words") while the latter is necessary to spell words that do not (i.e., "unpredictable words"). The students in this study were given both of the TWS-2 subtests.
The TWS-2 was standardized on an American sample of 3,805 children across 15 states. The 50 words that comprise each of the subtests were carefully selected to ensure that they were actually taught in schools. The words up to grade 8 appear in five commonly used American basal spelling series and the words above grade 8 appear on word frequency lists. Within the present study, raw scores for each student were converted to standard scores for predictable words, and unpredictable words. It is also noteworthy that the instructional word list used for both remedial groups did not contain any of the spelling words from the TWS-2.
The administration of the TWS-2 involved the examiner first saying the word in isolation, then using the word in a sentence, and finally saying the word again in isolation. The subjects were required to write the dictated words.

Cognitive Assessment System (CAS) Tests (Naglieri & Das, in press)

3. *Visual Search* is one of the Planning subtests of the CAS. It comprises 20 search tasks grouped under either the Automatic Search or Controlled Search component. The child's task is to find a picture, number, or letter identical to one located in a box in the center (called the Target) somewhere within the group of stimulus items (called the Field). The score is the time in seconds for the child to locate the Target embedded in a field of similar items (picture among pictures, number in numbers, letter in letters) or dissimilar items. Automatic Search time is the sum of times for searching where the Target differs in kind from the Field items (e.g., a picture among letters) whereas Controlled Search time refers to those where Target and Field items are the same. Automatic Search is essentially a measure of attention as the target "pops up" from the field, whereas in controlled or planned search the child has to make a

deliberate effort to locate the target. Alpha reliability of the test is .64 based on 135 children in grades 3 through 5.

4. *Crack the Code* is a Planning subtest from the CAS. In this subtest the student's task is to determine the correct sequence of a number of colored chips when given a limited amount of information. The subject is given two or three trials with feedback to determine the one correct order of chips for each of the 7 items. The subtest is organized into 7 items with 2 or 3 trials per item and a 3-minute limit per item. The score is determined considering number of trials necessary to produce the correct sequence. Alpha reliability is .68 based on 140 children in grades 5 and 6.
5. *Planned Connections* is a CAS Planning subtest. The child's task in this subtest is to connect, using a regular pencil, a series of numbered boxes in correct numerical sequence as quickly as possible. There are two kinds of items in this subtest: those that include numbers only, and those that include numbers and letters. The latter items involve connecting the boxes using numbers and letters alternately (1-A-2-B-3-C etc.). The overall score for all items is the time in seconds required to complete them. Alpha reliability is .64 based on 70 children in grades 5 and 6.

Subtests from the Kaufman Assessment Battery for Children (K-ABC) (Kaufman & Kaufman, 1983)

6. The *Hand Movements* subtest of the K-ABC is a Sequential processing task in which the child is required to reproduce a series of hand movements in the same sequence as the examiner. As with all the K-ABC processing tasks, the raw score is converted to a scaled score. The reliability of this test and the others which follow are given in the K-ABC manual.
7. *Number Recall* is a K-ABC Sequential task, in which the child attempts to repeat a series of numbers in the same sequence as the examiner.
8. *Word Order* is a K-ABC Sequential task which involves the child touching a series of silhouettes of common objects in the same sequence as the examiner has verbalized the names of the objects. (More difficult items include an interference task between the stimulus and response.)
9. *Gestalt Closure* is a Simultaneous processing task from the K-ABC. The child is required to name an object or scene presented as a partially complete "inkblot" drawing.
10. *Triangles* is a K-ABC Simultaneous task in which the child assembles several plastic triangles into patterns to try to match a series of models.
11. *Matrix Analogies* is a K-ABC Simultaneous task, requiring that children select a meaningful picture or abstract design which best completes a visual analogy.

12. *Spatial Memory* is a K-ABC Simultaneous task which involves recall of the placement of a set of pictures on a page which was exposed briefly.
13. *Photo Series* requires students to place photographs of an event in chronological order, and is one of the K-ABC Simultaneous tasks. The K-ABC was standardized on more than 4,100 administrations. Split-half reliability was established with the use of the Rasch-Wright model. The mean value for coefficients of internal consistency for 12 of the 16 subtests was .80 or above. Support for the construct validity of the K-ABC mental processing subtests was established through a correlational study between K-ABC and Factor scores on the Das-Kirby-Jarman Successive-Simultaneous battery (see K-ABC Interpretive Manual).

Intervention Program

Five global CAP tasks which had loaded most clearly on successive processing in factor analytic studies were selected and five spelling tasks were created, modeled after each of the CAP tasks. Representative examples of two of the global tasks are presented in the Appendix, along with the related spelling task in each case. One important component of the remedial training was having students talk about their approaches to the tasks, how they might change an approach to have it "work better," and so on. Within such discussions with the teacher the growth of planning ability was predicted.

The remedial sessions for the intervention group took place on a daily basis for each child, according to a prepared schedule, and located at stations in the student's classroom. A total of 20 hours of global and content-specific training was given to each child in the experimental class, while children in the control class received an equivalent number of hours of the "I-Can-Spell" program (Rodgers, Covell, & Slade, 1978). In this approach students were presented with words from the instructional word list at their respective ability levels, in a pretest-study-posttest fashion. Each word list was accompanied by workbook activities prior to posttest.

The daily remediation session in the intervention program involved training at two stations. Each station trained a different CAP task. A student would receive 5 minutes of training on a CAP task and then 10 minutes on the associated spelling task at each station (as in the control group the spelling words were those from the instructional word list). Following the training at both stations a cumulative spelling test was administered bringing the total time of the session to 35 minutes. The stations were operated by the classroom teacher and the classroom aide.

The remedial training was scheduled for the mornings. The students were on individual programs and worked independently on assignments until they were called for their remedial session. After the remedial session, students returned to their individual assignments. Each day the students were provided with schedules for their morning assignments. The instructional component of the students' school day was scheduled for the afternoons.

The students' daily performance on the CAP and spelling training was recorded. Specific record forms were used for each activity. The information

obtained from the CAP record forms provided the basis for establishing a starting point for training the student the next time the task was used. The spelling record forms provided the teacher with diagnostic information in terms of how particular students were misspelling words, as well as an ongoing indication of words which were spelled correctly.

Results and Discussion

Of vital importance in this study was an examination of the actual improvement in spelling achievement. This emphasis was reflected in the fact that two thirds of remedial training time was spent on spelling tasks, with one third spent on training with the global tasks. An expectation for concurrent improvement on the global tasks existed whereby specific training would enrich global processing in addition to task-related processing. As a limitation of the present study, it must be noted that results may be directly generalized only to populations within segregated classes for students with learning disabilities, and that further research will be necessary to determine broader implications of the method.

Student scores on the Test of Written Spelling were analyzed using a 2 (Group) x 2 (Pretest/Posttest) x 2 (Predictable/Unpredictable words) ANOVA, and group means are presented in Table 2. Main effects for Pretest/Posttest, ($F_{1,18}=68.2$; $p<.001$), and Word Type, ($F_{1,18}=70.7$; $p<.001$) reflected the superior performance overall at posttest, and for predictable words. A significant Group x Pretest/Posttest interaction occurred ($F_{1,18}=14.2$; $p<.001$) with spelling scores at posttest significantly higher for the experimental students thus providing support for the effect of the remedial program. It is also of interest to note that, although the small N per cell contributed to the lack of a significant Group x Pretest/Posttest or Group x Pretest/Posttest x Word interaction in the ANOVA, the means in Table 2 certainly suggest that the experimental students were better able than the control students to handle unpredictable words at posttest. Because

Table 2
Mean Scores on the Test of Written Spelling (TWS-2) for Experimental and Control Students

		Pre	*Post*
Experimental ($N=10$)	Predictable Words	9.60 (SD=5.38)	13.60 (SD=6.10)
	Unpredictable Words	6.80 (SD=3.77)	10.30 (SD=4.27)
Control ($N=10$)	Predictable Words	10.40 (SD=2.72)	12.50 (SD=3.34)
	Unpredictable Words	7.00 (SD=2.31)	7.70 (SD=3.02)

predictable words conform to rules and generalizations, while unpredictable words demand that the student focus on and analyze the letters sequentially, it might be further suggested that the latter skill may be enhanced through successive strategy training.

Results of the present remedial program hold promise for assisting disabled learners in their ability to spell. Anecdotal evidence from the 10 students in the experimental group, when compared with their 10 peers in the control group, suggests some positive and more broad-based effects of the remedial program. In all cases, the experimental students gained confidence in their ability to write as their spelling skills increased, and their written expression as analyzed through actual work sample comparisons was markedly improved. The fact that the negative "set" toward writing was lessened allowed these students to practice their writing skills, and of course one success built on another! The experimental students also became more aware of their own learning and became "active learners" during the remedial sessions, which is evident not only in the planning posttest results described later, but also in their more optimistic and flexible approaches to problem solving in the classroom in general.

To examine the results for global processing and provide direction for future studies having larger sample sizes, a series of *t*-tests was performed on Pretest-Posttest means for each group (means are presented in Table 3). Significant improvements were revealed for the experimental group in sequential coding ($t_{1,9}=3.64$, $p<.005$), and for both the experimental ($t_{1,9}=3.44$, $p<.010$) and control group ($t_{1,9}=3.84$, $p<.005$) in simultaneous coding. Certainly a case can be made for an increase in cognitive coding ability over time for all students, based on maturity and living experience, academic experience, and so on. However, there seems to be a more complex issue at hand when one examines sequential or successive processing. Past research has suggested that successive coding is particularly implicated in early reading skills such as basic decoding (Brailsford, Snart, & Das, 1984; Cummins & Das, 1977), and that even intellectually advanced students with learning difficulties may require specific successive training prior to achieving these basic skills (Snart, Das, & Mensink, 1988). The active intervention with the experimental group, using successive coding tasks, was apparently a factor in the differential improvement of sequential ability for these stu-

Table 3
Mean Cognitive Coding Scores for Experimental and Control Students

	Sequential Score		*Simultaneous Score*	
	Pre	Post	Pre	Post
Experimental ($N=10$)	21.50 (SD = 3.66)	27.20 (SD = 5.20)	46.50 (SD = 10.65)	52.00 (SD = 12.28)
Control ($N=10$)	26.20 (SD = 5.81)	28.40 (SD = 4.17)	46.10 (SD = 10.52)	50.30 (SD = 10.60)

Table 4
Mean Scores for Planning Marker Tasks at Pre/Post Test

Task	Experimental Group		Control Group	
	Pre	Post	Pre	Post
Visual Search (Automatic)	34.47 (SD = 8.15)	28.73 (SD = 8.09)	35.08 (SD = 11.16)	29.10 (SD = 12.70)
Visual Search (Controlled)	121.78 (49.34)	102.94 (19.48)	118.75 (25.95)	121.15 (29.88)
Planned Connections	136.00 (52.71)	100.67 (43.54)	130.06 (36.62)	114.08 (35.13)
Crack the Code	1.80 (2.20)	3.80 (1.75)	3.10 (1.79)	3.80 (1.81)

dents, and the impact of this improvement is emphasized when we examine actual spelling achievement.

Planning ability within the information integration model has generally been understood as a superordinate ability relating to a student's foresight and flexibility in problem solving. Taking into consideration again the small N per cell, t-tests of Pretest-Posttest means on planning marker tasks were examined for each group. Significantly better performance at posttest was found for the experimental students on the Visual Search (Automatic) task ($t_{1,9}=3.42$, $p<.01$) and Planned Connections task ($t_{1,9}=2.73$, $p<.05$), with none of the planning tasks showing pretest/posttest differences for the control students (means are presented in Table 4). Automatic search requires little planning; it is a test of attention. Of course, one can only speculate based on these results, but it seems that remedial training, encompassing as it did the verbalization of students in problem solving, may have contributed to an improved attention and planning ability overall. An initial indication such as this opens the door to continued research in this area.

In summary, the notion of spelling ability (or disability) as an immutable factor in students is certainly challenged by the present data which support a remedial option for disabled students. It appears initially that global plus bridging tasks focusing on successive coding and spelling could be successfully incorporated into whole class instruction for students with learning problems, and that they could impact positively on spelling achievement. Perhaps even more importantly, this study provides direction and optimism for future research into the use of such a model, utilizing nonacademic global tasks plus bridging tasks to an academic area, in subject areas beyond spelling (e.g., a simultaneous coding emphasis plus bridging tasks in reading comprehension). Further, such a remedial model may have direct application within a resource room situation, or even within a regular classroom with a preventive focus. The fact that strategies rather than merely academic content are actively taught, and that attention and planning abilities receive consideration within the context of the "delivery" of the remedial teaching, makes this

intervention more motivating for students and more likely to generalize to other academic pursuits of the student.

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Appendix

Descriptions of Two CAP Global Tasks and Related Spelling Remedial Tasks

CAP Task 10 Bead Threading

Strategy: Successive.
Objective: To thread a bead pattern by recall following either teacher demonstration or card study.

Instructions:

1. A "bead pole" is used: This has a cardboard cover around it and a window cut out in the cardboard cover. The teacher drops beads in a predetermined order, ensuring that the beads can be seen briefly as they pass through the window.
2. Learner copies the pattern using his or her own frame.
3. Correctness of sequence is checked by lifting the cover off the frame.
4. Student should repeat the task if incorrect (provide more cues).
5. Teacher records response (1 for correct, 0 for incorrect).

or

1. Teacher holds up a card with a picture of beads on a bead pole for the student to study.
2. Card is removed.
3. The student then attempts to duplicate the pattern observed.
4. Student then checks the card for accuracy. Teacher records the response (1 for correct, 0 for incorrect).
5. Student should repeat the task if incorrect. (Discussion of clues and strategies should precede next attempt.)

Spelling Task to Follow CAP Task 10

Instructions:

1. Teacher presents a card with letters arranged on it, says, "This word is _____," and turns the card over immediately saying, "Use the letters in front of you to make this word" (student places letter cards in a card holder). Teacher records the response and asks the student to mix up the letters.
2. Teacher presents a window chart to the student. Each window has a strip of paper with a letter on it. The teacher says, "Watch carefully." The teacher then pulls the strips through the windows one at a time, saying the letter name. The letter is exposed for no longer than 5 seconds. Student is then asked to arrange the letters in front of him in the card holder as he remembers seeing them. Teacher records the response. Student checks his response by exposing the letters in the windows. Each letter is left exposed to allow student to check. Student corrects errors as they are discovered.
3. Teacher takes the chart from the child and holds it up for the child to see that the letters are still exposed. Teacher then says the name of each letter and pulls the letter out of sight. Teacher says the whole word after the last letter has been named and pulled out of sight. The student is then asked to place the letter cards in the holder in the correct order. Teacher records the response. The student is then given the window chart to check his or her response. Student checks his or her response by exposing the letters in the windows. Each letter is left exposed to allow student to check. Student corrects errors as they are discovered.
4. Repeat step 3.
5. Repeat step 1.

CAP Task 16 Telephone

Strategy: Successive.
Objective: To dial from memory telephone numbers of increasing length.
Instructions:

1. The teacher reads a digit number sequence (allow 1 second delay between each digit).
2. Learner then dials this sequence on a telephone. Teacher records response (1 for correct, 0 for incorrect).
3. Repeat sequence if incorrect—discuss ways of remembering.
4. Discuss student's correct response.

Spelling Task to Follow CAP Task 16

Steps to Follow:

1. Student finds the correct envelope for the spelling word (envelopes are numbered). Inside the envelope are the materials required:
   - language master card (side 1 and side 2);
   - letter cards inside a small white envelope (15 letters in each envelope);

- 3 yellow sheets numbered 1, 2, 3 respectively. Student's spelling word is recorded on the language master card. On side (1) the word is said and then used in a sentence. On side (2) the word is spelled, that is,

  Side (1) turkeys—turkeys are birds
  (2) t-u-r-k-e-y-s.

Student takes everything out of the envelope.

2. Student is instructed to listen to side one of the language master card. The student is to print the spelling word he or she heard on yellow sheet numbered (1) and place it in the box beside him or her. Student is reminded to check that his or her name is on the sheet. (The sheets have been predated.)
3. Student is to empty the letters from the white envelope and arrange them in a line.
4. Then the student listens to side 2 of the language master card.
5. The student has extra letters. He or she must choose the correct ones to make the word after he or she has heard the spelling. The letters are spread out on the table. He or she must choose from the selection—10% of the spelling words will have misinformation, that is, not all of the required letters will have been included—the student will be encouraged to solve the problem.
6. Student then listens to side 2 again to check his or her arrangement. If there are errors student fixes them and then checks by listening once more.
7. Student mixes up the letters and repeats steps 4 through 6 two more times.
8. Now the student writes his or her arrangement for the spelling word on the yellow sheet numbered (2). The student then places this sheet in the box beside him or her.
9. The student puts everything back in its place and then writes the spelling word on the yellow sheet numbered (3) and then places it in the box.

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A Report on Learning Disabled Children's Use of Lab-Based Word Processing Versus Pencil-and-Paper for Creative Writing

To determine if learning disabled (LD) children would be able to utilize lab-based word processing (W-P) to enhance writing, a six-month study of writing performance was conducted with four LD children and matched normal achievers (NA) (age range 11 to 12 years). The W-P benefited both groups in terms of increased drafts and overall output. In formatting (paragraphing, spacing, etc.) the LD did not perform as well as NA children during W-P sessions. For both groups word processing did not lead to (1) quantitative differences between first and final draft length; (2) improvement on the Test of Written Language; (3) increased revisions involving meaning changes, spelling, punctuation, tense, number, abbreviations, and so forth. Thus the results indicate the learning disabled use lab-based word processing in a manner generally comparable to the normal achievers, and the positive effects are limited to quantitative rather than qualitative changes.

In this study we explored the viability of using a word processing lab for writing with learning disabled elementary-school children. We had previously documented that normal achieving elementary and junior high school level children were able to use a word processing lab quite effectively. We found that word processing led to improvements in writing productivity and revision when compared with paper-and-pencil performance (Morton, 1988; Morton, Lindsay, & Roche, 1989).

Because writing can be a major problem for the learning disabled (Lerner, 1976), and remedial progress is often slow and taxing (Johnson & Myklebust, 1967; Reid & Hresko, 1981), the word processor has been advanced as potentially important for this group (MacArthur & Shneiderman, 1986; Sapona, Lloyd, & Wissick, 1986). In view of the logical appeal of word processing and the favorable results emerging with normal achievers (Mor-

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ton, 1988; Morton et al., 1989), we extended our research to include learning disabled children. Consistent with our previous research we predicted that word processing would enhance their writing in terms of (1) drafts produced, (2) number of words written on final drafts, (3) total word output, and (4) revisions made when compared with paper-and-pencil sessions.

Method

Subjects

Four learning disabled children (two males and two females; age mean=11.85 years, *SD*=0.65) were matched on sex and age with four normal achieving students (age mean=11.90 years, *SD*=0.42). The learning disabled were intellectually average (WISC-R, Full Scale IQ=88.3, *SD*=4.1) and at least two years behind academically. They had been identified by a Special Education, Identification, Placement, and Review Committee and placed in special self-contained classrooms. Test scores on the Test of Written Language (TOWL, Hammill & Larsen, 1983) placed the learning disabled within the low-average range (standard score mean=8.2; average range is 7 to 13); the normal achievers were approximately one standard deviation higher (mean=11.1).

Procedure

We used a virtually identical procedure to that reported in Morton et al. (1989). The students used the microcomputer for creative writing (based on a Whole Language approach) for three months and used paper-and-pencil for a comparable three-month period with appropriate counterbalancing for order effects. Six microcomputers and two printers were set up in an empty classroom and students used this lab setting independently for 30-minute sessions of writing. Writing was monitored from the regular classroom by teachers and lab assistance was provided by a cooperative education student on work assignment. Three TOWL subtests (Word Usage, Vocabulary, and Thematic Maturity) were used for pretest and posttest comparisons.

To determine productivity (i.e., quantitative changes) in both pencil-and-paper and word processing settings, we recorded (1) number of drafts produced, (2) number of words in each draft, and (3) total output of each group in each setting. To evaluate qualitative changes we used a taxonomy modeled after Faigley and Witte (1984) on the first 30 words in each revised draft (Morton et al., 1989). We considered lexical revisions (i.e., additions, deletions, etc.) at three levels: First Order (meaning preserving), Second Order (meaning-altering but gist-preserving), and Third Order (meaning-altering and gist-altering). We considered Infralexical revisions also at three levels: First Order (changes in spelling and punctuation); Second Order (grammatical changes in tense, number, etc.); and Third Order (structural changes in format and paragraphing).

Results

Writing Productivity

Number of drafts. A two-way (2 x 2) ANOVA with Group (learning disabled, normal achieving) and Setting (word processing, pencil-and-paper)

as the independent variables was computed for number of drafts produced. Setting was a within-subjects variable. There was a main effect for Setting, $F(1, 6)=17.32, p<.006$, with subjects producing more drafts during the word processing sessions (mean=2.79) than the paper-and-pencil sessions (mean=1.83). Also, there was a main effect for Group, $F(1, 6)=13.16, p<.01$, with the learning disabled producing more drafts (mean=2.71) than the normal achieving (mean=1.9). There were no interaction effects. Means and standard deviations for productivity are presented in Table 1.

Total words produced. For total output a two-way (2 x 2) ANOVA (Group by Setting) was computed for number of words produced. There was a main effect for Setting only, $F(1, 6)=13.40, p<.01$, with subjects producing more during word processing (mean=2394.87) than paper-and-pencil sessions (mean=1413.36). A marginal two-way interaction for Group and Setting, $F(1, 6)=5.57, p=.056$, indicates a tendency for normal achievers to produce more overall on the word processor. Post hoc simple effects tests show that the normal achievers are producing more than the learning disabled in the word processing sessions only, $t(6)=3.36, p<.02$.

Draft lengths. A three-way (2 x 2 x 2) ANOVA (Group by Setting by Draft) was computed for length of first and final drafts. There were no main effects or interaction effects.

A marginal three-way interaction for Group, Setting, and Draft, $F(1, 6)=4.23, p=.085$, suggests a tendency for the normal achievers to produce more in terms of final drafts on the word processor and less when writing in the pencil-and-paper sessions, whereas the learning disabled seem to produce more on a final draft using pencil-and-paper.

Table 1
Means and Standard Deviations (in brackets) for Number of Drafts, Number of Words, and Number of Words in First and Final Drafts for Word Processing and Pencil-and-Paper Sessions for Learning Disabled and Normal Achievers

	Learning Disabled $N=4$		Normal Achievers $N=4$	
Number of Drafts				
W-P	3.25	(0.13)	2.25	(0.48)
P&P	2.10	(0.35)	1.55	(0.68)
Number of Words				
W-P	1687.00	(598.91)	3102.75	(592.16)
P&P	1338.00	(195.77)	1488.75	(1262.36)
First Draft Length				
W-P	95.30	(12.45)	121.63	(65.28)
P&P	109.80	(18.92)	143.33	(49.71)
Final Draft Length				
W-P	94.70	(11.98)	132.90	(39.07)
P&P	121.15	(33.02)	131.93	(38.27)

Note: W-P = Word Processing and P&P = Pencil-and-Paper.

Lexical Revisions

A four-way (2 x 2 x 3 x 3) ANOVA with Group (learning disabled, normal achieving), Setting (word processing, pencil-and-paper), Level of Change (First Order, Second Order, Third Order), and Revision Type (addition, deletion, substitution) as the independent variables was computed. The final three variables were within-subjects variables treated as repeated measures. The only effect was a main effect for Level of Change, $F(2, 12)=10.23, p<.01$. As the complexity of the Lexical revision type increases, the incidence of revisions decreases. First Order Revisions were most frequent (mean=0.79); Second Order Revisions were less frequent (mean=0.48); and Third Order Revisions were least frequent (mean=0.187). Means and standard deviations are presented in Table 2.

Infralexical Revisions

At the Infralexical level a four-way (2 x 2 x 3 x 2) ANOVA (Group by Setting by Level of Change by Revision Type) was computed. There were main effects for Group, $F(1, 6)=13.31$, $p<.01$; for Level of Change, $F(2, 12)=51.57$, $p<.0001$; and Revision Type, $F(1, 6)=16.48$, $p<.01$. Two-way interactions were evident for Group and Level of Change, $F(2, 12)=26.77$, $p<.0001$ and Level of Change by Revision Type, $F(2, 12)=12.22, p<.01$. Also, there was a three-way interaction for Group by Level of Change by Revision Type, $F(2, 12)=3.84$, $p<.05$. To clarify these effects each Level of Change

Table 2
Lexical Revisions with Word Processing and Pencil-and-Paper for Learning Disabled (LD) and Normal Achievers (NA)

		Word Processing		Pencil-and-Paper	
		LD	NA	LD	NA
First Order					
Additions	*M*	1.0	1.5	0.5	0.8
	SD	0.9	3.0	0.6	1.5
Deletions	*M*	1.0	0.8	0.8	0.5
	SD	0.0	1.0	0.5	1.0
Substitutions	*M*	0.0	1.8	0.3	0.8
	SD	0.0	1.7	0.5	1.5
Second Order					
Additions	*M*	0.5	1.8	0.3	0.3
	SD	0.5	1.3	0.5	0.5
Deletions	*M*	0.3	0.8	0.3	0.8
	SD	0.5	1.5	0.5	1.5
Substitutions	*M*	0.0	0.5	0.3	0.3
	SD	0.5	0.6	0.5	0.5
Third Order					
Additions	*M*	0.0	0.5	0.3	0.0
	SD	0.0	1.0	0.5	0.0
Deletions	*M*	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0
Substitutions	*M*	0.0	0.8	0.3	0.5
	SD	0.0	1.5	0.5	1.0

was analyzed and reported separately. The descriptive data on these separate effects are presented in Table 3.

First Order Infralexical revisions. A (2 x 2 x 2) ANOVA (Group by Setting by Revision Type) on the First Order revisions (spelling and punctuation) revealed a main effect for Group, $F(1, 6)=24.60$, $p<.003$, with the learning disabled making more revisions (mean=7.5) than the normal achievers (mean=1.88). Also, there was a main effect for Revision Type, $F(1, 6)=14.11$, $p<.01$, with the spelling revisions being more frequent (mean=8.06) than punctuation revisions (mean=1.31).

Second Order Infralexical revisions. A similar three-way (2 x 2 x 2) ANOVA (Group by Setting by Revision Type) on the Second-Order revisions (tense/number, abbreviation) revealed no main effects or interaction effects.

Third Order Infralexical revisions. A (2 x 2 x 2) ANOVA (Group by Setting by Revision Type) on the Third Order revisions (paragraphing and formatting) revealed a main effect for Setting, $F(1, 6)=11.71$, $p<.02$ and a Setting by Group interaction, $F(1, 6)=7.84$, $p<.05$ which shows that the higher incidence of Third Order changes in the word processing setting was due to the normal achievers.

Test of Written Language Data

Standard scores. A four-way (2 x 2 x 2 x 3) ANOVA on the TOWL standard scores (reported in Table 4) with Group (learning disabled, normal achieving); Setting (word processing, pencil-and-paper); Test Time (pretest, posttest); and Subtest (Vocabulary, Thematic Maturity, Word Usage) as the independent variables, with the last three variables being within-subjects variables treated as repeated measures, revealed no significant effects for

Table 3
Infralexical Revisions with Word Processing and Pencil-and-Paper for Learning Disabled (LD) and Normal Achievers (NA)

		Word Processing		Pencil-and-Paper	
		LD	NA	LD	NA
First Order					
Spelling	*M*	9.75	5.75	15.75	1.00
	SD	4.50	7.60	9.90	1.40
Punctuation	*M*	1.80	0.30	2.80	0.50
	SD	2.90	0.50	2.40	1.00
Second Order					
Tense, etc	*M*	0.00	0.30	0.80	0.80
	SD	0.00	0.50	1.00	1.00
Abbreviations	*M*	0.00	0.00	0.00	0.00
	SD	0.00	0.00	0.00	0.00
Third Order					
Paragraphing	*M*	0.50	2.30	1.00	0.00
	SD	0.60	1.90	0.80	0.00
Formatting	*M*	1.00	2.80	0.00	0.00
	SD	1.20	2.10	0.00	0.00

Table 4
Pretest and Posttest Standard Scores on the Test of Written Language (TOWL) for Word Processing and Pencil-and-Paper Conditions for Learning Disabled (LD) and Normal Achievers (NA)

		Word Processing		Pencil-and-Paper	
		LD	NA	LD	NA
Pretest					
Vocabulary	*M*	6.8	9.3	8.3	10.3
	SD	1.0	3.0	1.0	2.8
Thematic Maturity	*M*	8.8	10.8	9.3	10.5
	SD	1.7	1.7	2.1	1.3
Word Usage	*M*	8.0	12.8	7.5	12.5
	SD	0.8	1.7	1.7	1.7
Word Count	*M*	106.8	104.5	113.3	150.3
	SD	48.6	49.1	40.2	74.5
Posttest					
Vocabulary	*M*	7.5	10.3	7.5	9.0
	SD	0.6	2.2	1.9	4.2
Thematic Maturity	*M*	8.8	10.0	9.0	10.5
	SD	0.5	2.2	1.6	2.1
Word Usage	*M*	8.8	13.8	8.5	13.3
	SD	2.1	1.3	1.0	1.7
Word Count	*M*	106.5	128.3	129.5	99.5
	SD	24.1	54.5	27.0	52.4

Note: The standard scores have a mean of 10 and a standard deviation of 3.

Setting or Test Time. A main effect for Group, $F(1, 6)=9.41, p<.05$, was due to higher performance for the normal achievers (mean=11.06) compared to the learning disabled (mean=8.2). A main effect for Subtest, $F(1, 12)=9.17$, $p<.01$, and a Subtest by Group interaction, $F(1, 12)=7.05, p<.01$, showed the normal achievers with even higher performance on the Word Usage Subtest. Post hoc simple effects tests revealed that normal achievers performed higher on Word Usage in both Settings and at pretest and posttest levels ($p<.01$).

TOWL story lengths. A three-way (2 x 2 x 2) ANOVA (Group by Setting by Test Time) for the number of words written on the TOWL pretests and posttests was nonsignificant indicating both groups were writing stories of comparable length both before and after the word processing and pencil-and-paper sessions.

Summary

Table 5 presents a summary of points where the learning disabled benefit from the use of a word processor, and comparisons are included from Morton et al. (1989).

Discussion

The prediction that the learning disabled students in this study would produce more with the use of a word processor was partially supported. When students were assigned to the word processing group they produced more

Table 5
Comparisons Between Word Processing and Pencil-and-Paper for Learning Disabled (LD) and Normal Achieving Students (NA) in the Present Study and in Morton et al. (1989)

Dependent Variables	Present Study		Morton et al. (1989)			
	LD	NA	Grade 5	Grade 6	Grade 7	Grade 8
Productivity						
# of Drafts	S	S	NS	S	S	S
# of Words	S	S	NS	S	S	S
First & Final Draft Lengths	NS	NS	NS	NS	S	S
Lexical Revisions						
1st Order	NS	NS	NS	S	NS	NS
2nd Order	NS	NS	NS	NS	NS	S
3rd Order	NS	NS	NS	NS	NS	NS
Infralexical Revisions						
1st Order	NS	NS	NS	S	S	S
2nd Order	NS	NS	NS	NS	NS	NS
3rd Order	NS	S	S	S	S	S

Note: S = Significant Difference in favor of Word-Processing; NS = Nonsignificant Difference.

draft copies of revised texts and their total output was higher. However, the word processing did not lead to increased lengths for first and final drafts nor increased revisions.

Furthermore, there were no differences between word processing and paper-and-pencil for (1) pretest-posttest results on the TOWL nor (2) pretest-posttest story lengths on the TOWL.

The learning disabled were able to use the word processor in the lab setting in a manner generally comparable to normal achievers. They showed statistically comparable performance to the normal achievers on (1) the lengths of first and final drafts, (2) total output, (3) story lengths on the TOWL pretests and posttests, and (4) meaning-preserving and meaning-altering changes. They also showed comparable performance on revisions related to tense/number and abbreviations.

However, the normal achievers did show superior performance on Third Order Infralexical revisions (paragraphing and formatting) during word processing sessions (see Table 5). This may indicate a higher proficiency level on the word processor for normal achievers. This effect is also evident when the findings are compared with Morton et al. (1989) in Table 5. As may be seen in Table 5 the learning disabled differ from their controls and from the comparable grade 6 students in the previous study in the area of revisions. However, even the normal achieving controls in the present study differ from the grade 6 students in the previous study on first order infralexical revisions

and first order lexical revisions. It may be that these effects are masked for the controls in the present study by the small sample size.

In addition, the borderline interaction effects seem to indicate that normal achievers may (1) produce more in the word processing setting with respect to final drafts ($p=.085$), and (2) produce more in terms of overall output on the word processor ($p=.056$). The fact that the interactions are not statistically significant may also be an artifact of the small sample size.

The small sample size—often a consequence of research where distribution of computers is sparse (Maddux, 1985)—suggests interpretive caution is warranted. Yet Neale and Liebert (1973) present a rationale for the use of small samples by stressing that, "one ought to place at least as much confidence in results obtained from a small as from a large number of subjects" (p. 32) if only because a much larger mean difference is necessary to detect a significant difference. Large mean differences may indicate large practical effects.

Several additional effects were evident. First, the normal achievers had an overall lower incidence of First Order revisions (spelling and punctuation). This would be due to their fewer spelling and punctuation errors when compared to the learning disabled. Second, the learning disabled produced more drafts than the normal achievers. We suspect this is due to the teacher's emphasis in the learning disabilities class rather than shorter story lengths because there were no differences in story length. And finally, test scores on the TOWL favored the normal achievers as expected. Their even higher performance on the Word Usage subtest, as indicated by the interaction, suggests that syntactical processing may be a particularly important difference between the learning disabled and the normal achieving.

The most obvious general conclusion to emerge is that both groups are able to utilize the word processor in the lab setting to produce more drafts and more words overall. However, the normal achievers seem to be utilizing this technology more effectively in some areas (i.e., Third Order infralexical revisions and overall output).

One potentially important issue is the distance between students and teachers evident in this lab setting. Morocco and Neuman (1986) have suggested that the main advantage of word processing is the access the teacher has to the process the child uses in writing. The text is more public allowing for a more interactive process with other students and the teacher. Ideally, a teacher-run lab would alleviate monitoring problems and allow for effective interaction and conferencing. Perhaps computer labs could be attached to library settings (with a computer-literate librarian) or remedial and special education settings. Such a prospect would be amenable to research in most school settings and should be addressed in future research, especially with children who require additional attention.

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Exploring the Work of School Chiefs: The Case of the Ontario Director of Education

The way in which Ontario Directors of Education understand and conduct their work is explored through a reanalysis of interview transcripts and previous studies. Directors appear to perceive three distinct sectors within their work environment: board, system, and community. Work within the board sector revolves around meetings with the board chairperson, the corporate board, and individual trustees. System sector work centers on managing the administrative workflow through meetings with other central office administrators and school principals. Attention to public relations, interagency liaison, and the professional community emerged as important elements within the community sector. While the work of Ontario directors appears similar to that described in previous studies of chief executives, they appear to spend more time in scheduled meetings than their counterparts in other jurisdictions and their work activities display less of the brevity and fragmentation often found to be characteristic of managerial work. The complexity of the administrative environment and nature of the work done also appeared to be related to the size of the system being administered.

The study of chief administrators is a time-honored way of seeking insight into the mysteries of organizations and their administration. In modern times Barnard's (1938) classic dissertation on the *Functions of the Executive* is an exemplar of this approach, as is Mintzberg's (1973) pathbreaking observational study of *The Nature of Managerial Work* and Hodgkinson's (1978) philosophical treatment of administration. Each of these important works adopts a different approach and each offers us different, although complementary, insights into the character, work, and purposes of administration and administrators. Each, nonetheless, builds on the common assumption that studies of roles, positions, and people at the apex of organizational hierarchies provide particularly powerful paths toward improved practical and theoretical understandings of administration.

This article shares that assumption. My main objective is to discuss the work of Ontario directors of education with a view to advancing our understanding of school system administration. The paper is based on data gathered during a recently completed study of Ontario supervisory officers (Fullan et al., 1987). This policy-oriented study investigated the roles and responsibilities of the full range of central office administrative positions in Ontario school systems in order to recommend changes to the province's supervisory

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officer certification process. Although the final report of this parent study described and discussed the role and activities of Ontario directors, its overall objectives and purpose precluded a tightly focused analysis of a single administrative position. The principal investigators provided access to the original data on directors to facilitate such an analysis, additional details of which are contained in Allison and Allison (1988). The account of the work of Ontario directors that is presented here draws directly on the insights gained during that reanalysis and on those offered in McLeod's (1984) earlier observational study of 16 Ontario directors.

Setting

Ontario is the largest, richest, and most populous of the Canadian provinces. Despite the vastness of its total area of over 1 million square kilometers, the great bulk of the current population of more than 9 million is concentrated along and around an 800-kilometer-long axis extending from Ottawa, the national capital, to Windsor at the southwestern tip of Lake Erie. This rich agricultural, commercial, and industrial corridor is served by schools operated by large-area, county, and city school boards. Geographically this region has the aspect of a great arrowhead thrusting some 500 miles below the 49th parallel, which forms the boundary between western Canada and the United States. Settlement in the middle north of the province follows a rough arc from Ottawa, through Sudbury, then along the north shore of Lake Superior to Thunder Bay, some 1,400 kilometers distant. Provincial schools in this region are administered by large-area district boards, which service networks of widely separated small communities. With the exception of a few isolated settlements served by small school jurisdictions, the far north is virtually unsettled.

Whereas the formative history and current character of the American superintendency is characterized by ambiguity and conflict (Blumberg, 1985; Tyack & Hansot, 1982), the Ontario directorship evolved from a much more stable tradition of school administration (Allison & Wells, 1989). The British-derived political and administrative institutions established in the formative decades of this originally Loyalist province fostered an acceptance of centralized authority that was contrary to the "Town Meeting" rooted notions of local political autonomy which predominated in the "older colonies" to the south. Key legislation enacted in 1850 and 1871 laid the foundations for the development of a highly centralized system of school administration which endured until the 1960s, vestiges of which still endure. For almost a century, town and country schools were administered and supervised by a corps of centrally regulated inspectors. Chief administrators of city school systems were directly employed by local boards, but their appointment was contingent on certification and approval by the Ministry. All school system administrators became locally employed with the establishment of the current large-area school boards in 1969, but the practice of centralized certification examinations remains in effect and all supervisory officer appointments must still be approved by the central authority.

Under current legislation all Ontario school boards with a total enrollment of 2,000 or more students are required to appoint a director of educa-

tion to serve as chief education and chief executive officer (Ontario, 1980, S. 253). In practice all of the 112 boards[1] enrolling more than 1,200 students have a director, as do three boards enrolling fewer students. The Education Act further specifies that directors shall, "within policies established by the board, develop and maintain an effective organization and the programs required to implement such policies" (S. 253[2]). System job descriptions typically specify that directors will advise the board on policy matters, ensure the effective administration of the system, and provide leadership. It is also common practice for many Ontario boards to assign the additional legal title and duties of Secretary to the director's position. This additional function gives directors legal responsibility for board minutes and typically gives them charge of preparing the board agenda.

The Data

The original Fullan et al. (1987) study was based on data gathered from a sample of Ontario school systems drawn so as to ensure appropriate representation on the basis of size (enrollment), geographic location, and constitution (public/separate, anglophone/francophone). In each of the selected systems, interviews were held during 1985-1986 with the director, the chairperson of the board, and some or all central office supervisory officers (SOs), depending on total numbers. Interviews lasted about one and a half hours and were based on standardized protocols. Directors were interviewed according to the standard supervisory officer schedule (pp. 207-209). Career trajectory and demographic data were collected through a short pre-interview questionnaire. The discussion presented here is based on coded questionnaire and interview data from 22 directors supplemented by a reanalysis of 18 of the original interview transcripts.

Ontario school systems vary widely in size, those employing directors ranging in enrollment from approximately 1,000 students to over 100,000, the median enrollment being 8,700. Such large size variations obviously reflect proportional variations in the complexity of internal organizational structures and other related factors which could be expected to be associated with differences in the nature of the work environment and activities of directors. In order to explore this possibility during the reanalysis, the sample school systems were grouped into three size categories: Small (<10,000 students), Large (10,000-50,000), and Very Large (>50,000). Using this classification, 7 of the 22 directors discussed here administered small school systems (SSS), 11 large school systems (LSS), and 4 very large school systems (VLSS).[2] This "sample" provides an inverse proportional representation of the population of Ontario school chiefs, accounting for 43% of the VLSS directors ($N=7$), 16% of those in LSS ($N=50$), and 12% in SSS ($N=58$). The distribution of the respondents across these categories did, however, allow for within-group patterns of responses to be considered and for comparisons to be made across the overall size range.

All but 2 of the 22 directors considered here were men.[3] All had been teachers and most had spent at least several years as principals. Most had had considerable central office administrative experience in positions other

than that of director, the total sample reporting a median of 7.2 years of experience in such positions. Only two members of the sample had served as chief school officers (CSOs) of other systems prior to assuming their current post, which is consistent with McLeod's (1984) identification of an Ontario tradition discouraging lateral mobility among directors. Most of the CSOs considered here, then, were well experienced and seasoned educational administrators who had likely attained their professional apogee.

Analysis and Limitations

The transcript reanalysis sought to identify commonalities, contrasts, and conceptual themes in the way the directors described and discussed their work and, where possible, to relate these to the organizational size of the school systems. Particular attention was paid to the responses given to interview questions which asked directors to identify the most important aspects of their job, the major responsibilities and tasks involved, the people and groups dealt with, and the relative influence of these others on the way in which directors structured their work. Comments dealing with these and related matters were noted, compared, counted, grouped, and regrouped using the guidelines for the interpretation of qualitative data discussed by Miles and Huberman (1984).

Some of the interview transcripts were far more detailed than others, and this unevenness in the data could have distorted the findings in some respects. This limitation was borne in mind during the analysis and attempts were made to cross-check the conceptual "patterns, themes or 'Gestalts'" (Miles & Huberman, 1984, p. 216) that emerged as the work progressed. There were limited opportunities for triangulation within the data, however, and it has not been possible to test the representativeness of emergent conceptual patterns through further interviews designed to feedback themes and images to the directors concerned or to others. Nor has it yet been possible to gather additional data in an attempt to validate, refine, or falsify the impressions summarized below. Hopefully this article will contribute to these additional steps in the research process by communicating the tentative insights gained and encouraging further inquiry into the character of the work environment of chief school officers. Regardless, the limitations noted, together with the relatively small size of the data set examined, should be borne in mind when considering the findings reported below.

Work Patterns

The image of the director's work life which emerged from the reanalysis of the Fullan et al. (1987) interview data was generally similar to that presented in Mintzberg's (1973) influential study of executive work and reaffirmed in subsequent studies of school chiefs in other jurisdictions (e.g., Duignan, 1980; Pitner & Ogawa, 1981; Willower & Fraser, 1979). On the whole the directors reported a work week of between 40 and 80 hours, with most of this time being spent in interaction with others.

The transcripts contained references to tasks and duties which embodied or reflected aspects of Mintzberg's (1973) 10 interrelated managerial work roles, namely the three interpersonal roles of figurehead, leader, and liaison;

the three informational roles of monitor, disseminator, and spokesperson; and the four decisional roles of entrepreneur, disturbance handler, resource allocator, and negotiator (pp. 167-170). But while there was some evidence in the transcripts of the "brevity, variety and fragmentation" that Mintzberg (1973, p. 32) found to be so characteristic of managerial work, these qualities did not appear to dominate the work of Ontario school chiefs to the same degree as in the case of the executives studied by Mintzberg, or the school superintendents studied by Pitner and Ogawa (1981) and Duignan (1980). Similarly, while it was clear that the work of these Ontario directors was, as in the case of other studies, primarily concerned with communication of various kinds, and that the basic "tools" through which they conducted their work were the five basic media identified by Mintzberg (mail, telephone, unscheduled and scheduled meetings, and tours), Ontario school chiefs appear to spend more of their time in regularly scheduled meetings than the subjects of previous studies. Duignan (1980), for example, reported that his eight Alberta superintendents spent roughly a quarter of their time in unscheduled, and a quarter in scheduled meetings, while Pitner and Ogawa's (1981) six California superintendents spent aggregates of 9% and 46% of their time in unscheduled and scheduled meetings respectively. McLeod's (1984) published report of his study of Ontario directors, however, has them spending one half to two thirds of their working week in "protracted meetings, usually involving large numbers of participants" (p. 175).

Timed observational data were not gathered in the original Fullan et al. (1987) study, but the interview data support, and in some ways extend, this finding. Directors typically reported that they had regularly scheduled administrative committee meetings several times a week as well as frequent, often daily, meetings with colleagues and in some cases trustees, plus, of course, regular board and board committee meetings. Ontario boards commonly schedule one evening a week for regular meetings during the academic year, alternating standing committee and full board meetings every other week. Most of the directors, nonetheless, reported blocking out two or more evenings a week for meetings, with one sometimes being reserved for public relations functions in the community. Whether a schedule such as this results in Ontario school chiefs typically spending a greater proportion of their time in scheduled meetings than their counterparts in other jurisdictions is not, however, entirely clear. Mintzberg (1973), for instance, reported that the single school superintendent in his study spent 75% of his time in scheduled meetings.

Even so, attendance at a large number of formal and semiformal scheduled meetings will logically reduce the overall amount of brevity and fragmentation in the work of directors, and this might well explain why these commonly noted characteristics of managerial work were not readily apparent in the interview transcripts, especially as a fair proportion of the scheduled meetings attended by directors will be board or committee meetings of record wherein business will be conducted with appropriate structure and formality. Regardless, being at and in a multitude of timetabled meetings is clearly the staple of a director's working life.

Work Patterns and System Size

Mintzberg (1973) also noted that chief executives of larger organizations typically attend slightly more scheduled meetings, and that these generally last longer and involve more participants than those in smaller organizations. The transcript reanalysis found a similar pattern in the case of Ontario CSOs, particularly with regard to evening meetings. Whereas most of the SSS directors typically reported that they were engaged in meetings two to three nights a week, all three VLSS directors declared that they frequently attended meetings three to four evenings a week, one noting that during busy weeks he would have meetings every night of the week. Similarly, while some directors of small and large systems explained that they tried to keep their weekends free, others, and most particularly those in larger systems, reported that they often attended scheduled meetings during weekends.[4] One of the VLSS chiefs, for instance, explained that he had regularly scheduled meetings on two Saturdays and one Sunday each month. Some of the directors who declared that they attempted to keep their weekends free also noted that they would often spend part of this "free time" engaged in paperwork, while one of the VLSS chiefs specifically explained that he always reserved Sunday afternoon for "homework." Others made similar references to Sunday as a kind of "sanctuary day" free of formal commitments which allowed them to catch up with outstanding work and reading.

Work Environment

Analysis of the transcripts suggested that the directors tended to sector their work environment and their responsibilities into three domains: board, system, and community. Each of these sectors appeared to represent a different but reciprocal action arena with a distinct set of obligations and objectives.

Orientation Toward Sectors

Different directors reported spending more or less time and care on one or another sector. In several cases directors understood that the board expected them to tighten up certain aspects of system operations and as a consequence of this "commission" from the board they deliberately involved themselves more in the workings of the system. Others believed that it was important to better represent the system to the community and thus they tended to place more emphasis on this sector, taking care to develop good links to community groups. In another case a director confided that he gave hardly any attention to the community sector except for necessary ceremonial events, preferring to "leave all that to the trustees." The relative emphasis placed on the three sectors also appeared to be related in some respects and in varying degrees to the size of the system. Additional details are discussed below, but in general activities involving the board and community sectors figured more prominently in the transcripts from LSS and VLSS directors, while SSS chiefs appeared to be more directly concerned with system operations. Yet, regardless of the relative emphasis each CSO placed on one or another of these sectors, most seemed to perceive each as a distinct domain. More importantly, they also appeared to share a common understanding that the elements of one sector should not, ideally, intrude in an uncontrolled manner on another.

Thus, in addition to regarding each sector with a different gaze, they were generally concerned to keep them apart.

This general desire to keep the elements of each sector in their proper place was most evident at the interface between the board and the system sectors. As expressed by one director, this is essentially a matter of "buffering" the system from the trustees. This is not to imply that the directors attempted to sabotage or otherwise disrupt the implementation of board policies. On the contrary, the transcripts showed directors as having a strong sense of loyalty toward official system policy. Indeed, they recognized a clear duty to implement properly constituted board directives; but at the same time they recognized a collateral duty to help the board make good policy and to try and head off decisions and actions, particularly by individual trustees, that they believed would unnecessarily endanger the operation and health of the system. Consequently, many of the interview transcripts contained an implicit, and at times explicit, distinction between the corporate board and its constitutionally supreme authority on one hand, and trustees as fallible individuals on the other.

The Board Sector

The interview data did not directly illuminate the way in which directors interacted with the board in its corporate manifestation, but from clues in these data and McLeod's account it would seem that if things are going well the director's main task during formal meetings will be to ensure that all the necessary props and actors are at hand and hope that the talk and action does not diverge too far from the roughly drafted script. Control of board meetings, of course, resides with the chairperson, but the transcripts suggest that there will likely be a close working relationship between this key individual and the director.

Directors and chairpeople. Many CSOs commented on the importance of this relationship and their frequent meetings with the chairperson to discuss the general state of affairs and the business of the next board meeting. Often, it appears, meetings between the chairperson and director revolve around the agenda for the next board meeting during which both content and procedure are reviewed, and potential problems and possible solutions are discussed. Semiformal review meetings of this kind may occur weekly, but in some instances directors and chairpeople meet much more regularly. One of the VLSS chiefs, for instance, reported that he met with his chairperson every day, while five of the other directors also mentioned that they met or talked to their chairperson "most days."

Trustees. Many directors, and particularly those of large and very large systems, also reported a great deal of interaction with other trustees. To some degree this may have been an outcome of the timing of the research and the phrasing of key questions in the interview protocol. Most of the interviews were conducted shortly after school board elections, and many directors commented on the need to socialize the new trustees to their role—a revealing comment in itself. Unfortunately, interview questions designed to probe responsibilities and role also asked respondents to frame their answers

with regard to their work "over the last two months." Nevertheless, it would seem that many of the directors, particularly those in larger systems, met frequently with trustees to answer questions regarding system operations and discuss Ministry policy, community developments, and, of course, board business and political issues. This aspect of a director's work appears to be less dominant in smaller systems, trustees being identified far less frequently in the SSS transcripts when the respondents were asked to discuss the extent to which they worked with different individuals and groups. Even so, individual and small group meetings with trustees are clearly a delicate aspect of a CSO's work, for he or she cannot afford to be suspected of taking sides in political struggles between trustees. One of the VLSS interviewees was particularly candid on this point and took care to point out that he was scrupulously open and above board in all such encounters.

Strong collaborative data on the importance of the relationship between the director and board members emerged in the answers trustees gave in response to being asked their expectations of the director. As expressed in the Fullan et al. (1987) report, trustees said that they wanted:

> good and complete information from the director, but even more they want advice, recommendations, and direction. This expectation seems to be paramount, and was expressed by virtually all trustees we interviewed. One trustee suggested a further refinement, the director "getting trustees to recognize the implications of their own ideas." In other words the director is to protect trustees from the unanticipated consequences of their own actions.... [Also] trustees assume the director will inform them of the *political* consequences of the policies they suggest, but it involves more than just this. As one trustee put it, "I expect the director to anticipate moves on the part of various trustees and others in the system, and have a motion in mind that would satisfy the various elements." (p. 78)

Flight plans. Clearly advice and guidance of such magnitude and sensitivity cannot be given in the fishbowl of a public meeting and must, perforce, be sought "backstage," hence the previous reference to the roughly drafted script for formal meetings of the corporate board. This tentative outline will not necessarily have been drafted by the director and chairperson alone, for each trustee will likely anticipate his or her part and that of others, as well as the general ebb and flow of debate. Even when the outcome of a vote is unpredictable, the alternatives to be decided will likely have been consensually culled to eliminate the unpalatable, perhaps during the committee-of-the-whole discussion that many Ontario boards hold in camera immediately prior to their public meetings. In such a scenario, the function of the CSO is analogous to that of an air traffic controller equipped with an intermittently functioning and somewhat unreliable radar set. He has a fair idea of the location, route, and probable destination of each trustee, and he and the chairperson will likely have drafted rough flight plans and discussed possible emergency procedures. But there is always the risk of turbulence, especially if unpredictable elements intrude. Moreover, political expediencies can result in trustees making sudden in-flight maneuvers.

Difficulties. The details of managing the board sector can be complex, especially given the number of trustees, often 15 or more, that sit on the larger Ontario boards and the emergence of the "full-time" trustee (Hickcox,

1974). It would also be incorrect to imply that the relationships between directors, the corporate board, and individual trustees are always respectful and orderly. The interview data suggest that tension and conflict can be inescapable aspects of the director's work, especially when a board is divided along political lines or trustees involve themselves with system elements, frequent references to both of these contingencies being found in the transcripts, particularly those from directors of VLSS. Nevertheless, the account given above is believed to approach the truth of the matter, although it does not fully apply to all situations. One director of a large system, for instance, declared that he did not spend a lot of time with trustees because "we do our dealings at board meetings, not behind the scenes."

The System Sector

As would be expected, the directors also reported that they interacted frequently with their supervisory officers and school-based personnel, this being, of course, the prime means by which they manage the system itself. Working with and through senior colleagues is obviously another important medium through which directors draft the scripts, rehearse key parts, and ensure the readiness of essential props in preparation for meetings with the corporate board and its committees. McLeod's (1984) composite vignette captured this aspect of work with senior staff well:

> In the conference room Alex and his superintendents work through each agenda item for tonight's meeting.... What will the trustees say to our recommendation on the next item? The director draws his aides' attention to a particular document. At this time it is potentially too explosive to take to the board. Reroute it through channels!... The director wants a briefing on agenda item #3. He knows that it falls within the Superintendent of Business's bailiwick. Yet trustees like to quiz their CEO on whim it seems. Besides, his subordinate will benefit from this rehearsal. Alex takes his turn at giving background information. He explains the budget situation ... [and] ... counsels his superintendent on how to present the figures to trustees. After 70 minutes and scrutiny of 13 agenda items, the administrators disperse. (p. 181)

In addition to the obvious similarity to a dress rehearsal, this slice of a director's work life shows clearly how he must meld his private knowledge of trustees' "flight plans" with the administrative workflow of the system, while at the same time ensuring all the necessary reports and information will be on hand and that his people are well briefed and primed for their performances.

Direct and indirect management. Nevertheless, most of a director's work meetings with his subordinate administrators appear to have a tighter focus on the internal operations of the system, and in the smaller systems the directors reported that they were of necessity directly involved with one or more aspects of system operations. One SSS chief, for example, talked about his personal involvement in teacher evaluations, another his work implementing a new elementary school computer program, and several others their responsibilities for contract negotiations with teachers and nonprofessional staff. As noted previously, directors of smaller systems appear to spend less time in scheduled meetings, and from the transcript analysis they tend to

manage system affairs primarily through individual contacts with other SOs and principals.

Functional and structural differentiation in larger systems ensures that system operations are attended to by subordinates, with the coordination and supervision of school and system operations in the larger systems being handled by senior SOs, and in the largest by deputy directors. In LSS and VLSS much of the director's system sector work is typically conducted in and through regularly scheduled "cabinet" meetings with senior SOs, "council" meetings with larger groups of system administrators, often including principals, as well, of course, as through discussions with individual superintendents or ad hoc groups of colleagues. These various internal meetings are the media through which most directors of larger systems appear to manage the flow of information, issues, and decisions in the organization, and they also provide the main means by which they keep in touch with events and developments. Several directors described this aspect of their work as "supervising the other SOs," and it would seem that each meeting or encounter allows the director to review the status of various issues, projects, processes, and proposals, and, if necessary, give additional instructions or advice. New problems or concerns are also identified, categorized, solved, delegated, or otherwise assigned a place within the administrative workflow.

Principals. Three quarters of the directors reported that they also had direct dealings with principals. Some CSOs reported that they met regularly with specific groups of principals, while others said that they only dealt with principals "on demand." Principals figured more prominently in the SSS transcripts, and it appears that directors of smaller systems typically rely on and interact more frequently with their principals than is the case in larger systems with their greater numbers of central office administrators. One SSS director explained that he used his principals as consultants, while two others specifically identified principals as the group which had the greatest impact on their work. None of the LSS or VLSS directors, however, mentioned principals in their responses to this question, all nominating either trustees or supervisory officers as the group having the greatest impact on their work.

School visits. Brief meetings with principals were also mentioned as a feature of schools visits, with half of the directors offering specific comments on this aspect of their work. Three of the LSS transcripts and two of those from VLSS revealed that the directors concerned had attempted to deliberately integrate school visits into their regular work activities. One LSS chief declared that he visited one school each week, another that he visited 10 schools a month. Similarly, one VLSS director said "Tuesday is school day," another that he tried for half a day each week in schools. Three of the SSS chiefs also specifically mentioned school visits, but in two of these cases the directors complained that they had difficulty in finding the time to "get out to the schools," a problem that was clearly exacerbated by the large geographical area of some systems. This was also a factor in the third instance, but in this exceptional case the director explained that because he was new to the system he had made it a priority to personally visit every classroom. Thus, while some CSOs of both large and small systems saw

school visits as an important aspect of their work, the demands of other responsibilities and the greater traveling distances involved appeared to make this more difficult in the smaller systems.

Other specific aspects of the director's work that appeared in the transcripts were the generic administrative tasks of making decisions, solving problems, and resolving conflicts. Little specific information was given in the transcripts on the kinds of decisions, problems, and conflicts that they handled personally, but it would appear that many concern or arise directly from managing the administrative workflow, while others are rooted in disturbances in the board and community sectors, or are associated with an intrusion of one sector into another.

Difficult relationships. One interesting point here was that when asked to identify groups with whom they had particularly difficult relationships, directors of small and large systems typically identified two, three, or more such groups, whereas the VLSS directors named very few, if any, such groups. One VLSS chief said that he had recently had a difficult experience with the caretakers' union, but that that particular problem was not part of his formal responsibilities and he had chosen to become personally involved in resolving the matter. Another simply declared that he did "not really" have any difficult relationships. One SSS chief gave a similar answer, but all others and all the LSS chiefs identified groups with whom they had what appeared to be continuing difficulties. The most frequently mentioned were teacher federations (unions) and other employee unions, some respondents explaining that contract negotiations and grievances posed particular problems.

The Community Sector

All but one of the transcripts contained comments dealing with work and responsibilities outside the system and board sectors. Taken together these comments defined and encompassed four environmental precincts, as it were, each of which can be taken as constituting a subsector of the community-oriented activities engaged in by directors.

Public relations. Nine of the directors made specific reference to "PR work" of one kind or another. The LSS directors appeared to be more concerned with and active in this area. One declared that he spent "a lot of time doing PR work in the community," another that he "does a lot of community PR stuff." For the most part this would seem to consist of maintaining contact with and making presentations to what one described as "education related groups and service groups." One CSO said that he regularly made "40-50 presentations a year," and this may not be atypical for directors who place a high priority on this precinct of the community sector. Specific references were also made to "ratepayers," and one to the "communi*ties*," meaning the different towns and other settlements within the boundaries of the system. On this point, the director in question explained that "we're going to nail them for increased taxes so we need their support."

There were far fewer references to public relations activities in the SSS and VLSS transcripts, and those that were made tended to have a different flavor. Two SSS directors, for example, cited their involvement in preparing

newsletters as an illustrative instance of their public relations work while another confessed that he didn't like to speak to public groups and thus did very little. None of the VLSS chiefs talked specifically about PR work, but each made references to the importance of representing the board to the community, particularly through attendance at community-oriented school activities and symbolic and ceremonial events such as civic functions, dinners, retirements, and funerals. As expressed by one VLSS chief, "senior administration *has to be seen* [emphasis added] to be meeting the needs of the community."

Interagency liaison. The establishment and maintenance of formal or semiformal working contacts with local agencies also emerged as an aspect of a director's community-oriented activities. Here emphasis is placed on the exchange of information relevant to the operation of the system and, particularly in the smaller systems, the direct management and coordination of interorganizational relationships between the system and various community agencies. One specific example given was the management of shared facilities, a task which has gained increased importance and complexity in smaller systems with the advent of government funding for Roman Catholic high schools and the entrenchment of French language education rights. Other examples mentioned in the transcripts included liaison with social and municipal agencies.

Parents. Perhaps surprisingly, only four of the transcripts made specific references to parents, but in each case the relevant comments portrayed parents as a distinct element within the external environment. Also in each case, the references associated parents with problems of one kind or another. One CSO, for example, described his relationship with parents as primarily one of handling complaints, another explained that he saw his role toward parents as being "available and understanding," while another declared somewhat ruefully that "parents think I can solve all problems."

Professional community. Finally, there was clear evidence in the transcripts that the directors devoted some of their scarce time to maintaining contact with their professional colleagues and peers and gathering intelligence at conferences and other information oases. Few specifics were given, but it would seem that attendance at Ministry briefings and participation in professional activities provide important vehicles for both gathering and exchanging information. No reliable measure on how much time CSOs spend on this aspect of their work was available, but one declared that he regularly devoted 10-15% of his time to "out-of-county" activities. Some directors complained that they were caught in a "Catch 22" in this part of their work, for while it was necessary for them to spend time out-of-system to gain the up-to-date information demanded by trustees, some of their political masters also wanted "their" director to be available to them at all times.

Discussion

Three broad and related points emerge from the analysis reported above. First, the work and role of Ontario directors as represented in the data discussed here broadly conforms to previous analyses of executive work and that of school system chiefs in particular. As noted at the outset of the

analysis and illustrated throughout the account of the findings, the descriptions which directors gave of their work reflected the managerial roles identified by Mintzberg (1973), as well as the nature and texture of the work done by the executives he studied and the school superintendents studied by others. Given the differences between the historical, organizational, and institutional contexts of Ontario directors and American superintendents discussed elsewhere (Allison, 1988; Allison & Allison, 1988), this is itself a notable finding.

Generalism

Second, while there were clear similarities between the findings of this and earlier work, at the same time the description and analysis of the work of Ontario directors offered here also helps illustrate other aspects of executive work which were not stressed in previous studies. One synthesizing concept which helps capture some key elements of the directors' orientation to their work environment is provided by Hodgkinson's (1978) notion of generalism. He has argued that whereas management is essentially a specialism, administration is a generalism. He further refined this point by noting that the chief executive is the organization's "specialist in generalism" (p. 17). As such he or she is naturally more concerned with ends than means, with the broad coordination of effort rather than the handling of specific functions, with the future rather than the present, and with planning rather than reacting.

Such characteristics were threaded through the account of CSOs' work offered above, and seem particularly evident in the ways in which directors relate to and integrate elements within the board, system, and community sectors of their work environment. Their interactions with each of these sectors provide them with unique opportunities to accumulate information and develop in their minds a broad but complex image of the system which is more detailed and complete than that held by others. Their unique knowledge of each of the three sectors together with their broad general understanding of the organization enables them to explain, interpret, and relate each sector to the others. In addition, their role requires them to use their unique knowledge to balance, arbitrate, and when possible harmonize many diverse and often inherently conflictual expectations and demands. In essence, they must use their specialized generalist understanding of the organization and its operations to guide, integrate, and choose between the specialized specialist understandings and interests of others.

This view is supported by a pertinent finding in the original Fullan et al. (1987) report. In the course of analyzing the work of all the supervisory officers interviewed, the researchers developed three summative style dimensions: system driven versus school driven, reflective versus fire fighting, and generalist versus specialist (pp. 81-85). As would be expected, directors were found to be dominantly system oriented, but they were also strongly reflective and overwhelmingly generalist in orientation. Their subordinate superintendents, on the other hand, were rated consistently lower on all three dimensions.

Size

Finally, while there would appear to be broad similarities in the work environment of Ontario directors, a number of size-related differences in both the nature of the work and the emphasis placed on particular tasks and relationships were noted. Thus, while the construct of a sectored work environment appeared to accurately account for the way in which directors in small, large, and very large systems structured their activities and understood their main tasks and responsibilities, differences in the emphasis which directors placed on their dealings with each sector and differences in the ways in which they interacted with each appeared to be at least partially related to the organizational size of the system. Other factors such as the administrative style of the CSO concerned, his or her personal values, specific directives or policies of the board, and so forth would account for some of the differences, but the size of the system and related structural and environmental factors seem to offer a more consistent and parsimonious explanation for some of the patterned differences noted. The tendency for directors of SSS to be involved in managing some discrete operational aspects of the system while those in larger systems concentrate on coordinating and supervising the work of supervisory officers provides one more obvious example. The greater emphasis which many directors of LSS appeared to place on managing the board sector and participating in public relations activities might constitute another, as might the more ceremonial involvement of VLSS directors in the community sector and the way in which they appear to be able to resist entanglement in difficult relationships with groups with which the board and other administrators must deal.

Spectrum of abstraction. Size-related differences in the work of CSOs can be related to the notion of generalism discussed above with the assistance of an empirically-based theory advanced by Jaques (1976). His scheme recognizes the existence of a profound disjunction between the administration of what he calls direct command and general command systems. In Jaques' words, the heart of this difference involves

> the step from work and management based upon concrete modes of thought to work and management based on abstract modes of thought. No longer can the chief executive or manager perceptually encompass the whole of his task, even by imaginal scanning. He must be able to detach himself sufficiently from the concrete situation to be able to gain a rounded perspective and grasp it by means of conceptually formulated information. (p. 318)

Jaques' theory also contemplates the existence of higher and more abstract levels of imaginal complexity in the administration of particularly large organizations. His notion of general command systems is quite similar to Hodgkinson's (1978) idea of generalism, and taken together the two views suggest a spectrum of conceptual abstraction in the governance of organizations ranging from concrete, managerial, and specialist emphases and orientations in smaller systems to more indirect, abstract, and generalist modes in larger systems.

There are problems in matching Jaques' (1976) organizational size categories to school systems, but the administration of at least the smaller

systems in the SSS category used here could be taken as embodying elements of his direct command systems while the LSS systems would clearly qualify as instances of general command systems. As such, Jaques' theory and the notion of a spectrum of conceptual abstraction offers a basis for interpreting and relating the size-related difference noted above. Moreover, the VLSS could be recognized as Stratum 4 and 5 organizations in Jaques' scheme, in which case his theory predicts that the directors of these particularly large systems would be required to work at even higher levels of abstraction and generalization. No clear test of this hypothesis was possible with the data considered here, but the findings reported above would appear to provide some support for such a view. Nevertheless, the Jaques-Hodgkinson notion of a size-related spectrum of conceptual abstraction and generalism in the orientation of chief school officers to their work environment would appear to offer a potentially profitable avenue for future research, especially as it embodies profound implications for the education and selection of school chiefs of different-sized systems.

Conclusion

This article begins by noting that the study of chief executives has traditionally offered insightful paths to better understandings of administration and administrators, and this also seems a suitable point on which to end. Despite the limitations of the data considered in the reanalysis reported here, the findings and explanatory images discussed suggest that studies of chief school officers can yield particularly powerful insights into the administration of school systems. As such, further and more detailed examinations of the work and work environment of chief school officers would appear worthwhile. Although relatively simple and not particularly novel, the construct of a sectored work environment developed in this paper appeared to be solidly anchored in the data and could well provide a useful framework for future work. The possible effect of organizational size and related factors of the administration of school systems and how chief school officers orient themselves to their work environment also seems worthy of further study, and the notion of a spectrum of abstraction and generalism outlined above may prove useful in this respect. Yet, regardless of the conceptual frames which may guide future work in this area, the important point would seem to be that we seek ways to better understand how chief administrators understand their world and their work.

Notes

1. Excluding the Metropolitan Toronto School Board.
2. The 18 original interview transcripts on which the bulk of the detailed analysis reported here was based were distributed across these size categories as follows: seven from SSS, eight from LSS, and three from VLSS.
3. Male pronouns are used throughout the discussion of the transcript reanalysis in order to preserve the confidentiality of the interview data and avoid inadvertently identifying the two women CSOs in the sample or attributing quotations to them.
4. One partial exception here concerns some of the northern SSS where the directors noted that regular board meetings were held on Saturdays.

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The Relationship Between Teacher Stress and Perceived Coping Effectiveness: Gender and Marital Differences

Elementary school teachers (n=781) were surveyed to examine the relationships between sources of work-related stress and types and effectiveness of coping strategies. Multivariate analysis of variance revealed gender differences on role stress, supervisory support, and job and life dissatisfaction. In all cases males felt more stressed than did females. In addition, unmarried teachers felt more role stress and life dissatisfaction compared with married teachers. With regard to coping, males felt that avoidance coping was more effective than did females, whereas females felt that problem solving was more effective than did males. Multisample multivariate regression models (LISREL VI) revealed that teachers who were most stressed perceived avoidance strategies to be more effective than those who felt less stressed, whereas teachers under less stress perceived problem solving techniques to be more effective. However, the relationships between stress and coping differed depending on whether male teachers were married, but no such differences emerged for the females. Finally, absenteeism was related to stress but not related to the coping factors.

Teaching has been identified as a particularly stressful occupation (Kyriacou & Pratt, 1985) and evidence indicates that there is a correlation between perceived teacher stress and the experience of psychological and physical symptoms (for reviews see Hiebert & Farber, 1984; Needle, Griffin, Svendsen, & Berney, 1980; Turk, Meeks, & Turk, 1982). Surprisingly, research in the stress and coping literature has relatively ignored gender-related differences in the appraisal of stressful events and few studies have examined role-related differences (e.g., marital status). Given there are significant differences between the sexes in gender-role development, one would expect that men and women would differ in their appraisal of stressful events (Bem, 1981). Furthermore, because family life provides its members with social support, married teachers, compared with unmarried teachers, may cope better with work-related stress (Cobb, 1976; House, 1981).

Coping Strategies

While considerable emphasis has been given to investigating the causes and consequences of teacher stress, few studies have focused on how teachers

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cope with work-related stress (e.g., Kyriacou, 1981; Needle, Griffin, & Svendsen, 1981; Ratsoy, Sarros, & Aidoo-Taylor, 1986). The importance of coping as a mediator between the behavior of the person and environmental demands has been emphasized by Lazarus and Folkman (1984). According to their theory, psychological stress occurs when an individual appraises a situation as threatening and perceives his or her resources for coping with it as inadequate. Coping is considered an ongoing process and whether stress, measured at any one point in time, causes coping, or whether the converse is true, is difficult to determine. Lazarus and Folkman (1984) posit that the relationship between stress and coping variables is circular. Further, they suggest that coping serves two major functions. Coping strategies may be directed at the situation (problem-focused) or they may be directed toward managing emotional responses (emotion-focused). In most stressful situations both forms of coping, albeit in different proportions, will occur (Folkman & Lazarus, 1980).

Most previous studies of teachers' coping strategies have focused almost exclusively on frequency and type of coping (e.g., Kyriacou, 1981; Needle et al., 1981). Although the *use* of coping strategies is important, relatively few studies have addressed the *effectiveness* of coping efforts to buffer stress and minimize its effects. This is an important issue because, although a particular coping strategy may be used frequently, it may not be effective in reducing stress. Common indicators of successful coping include perceived helpfulness or effectiveness, reduction in emotional distress, and reduction in problem level (Menaghan, 1983). Furthermore, some theorists regard the active efforts to change the cause giving rise to problems (e.g., problem solving) as healthy, functional, and effective modes of coping whereas passive modes of coping (e.g., avoidance, denial) have been viewed as maladaptive and ineffective ways of facing stress (e.g., Haan, 1977).

Studies that have assessed the perceived helpfulness of coping usage and emotional distress levels reveal a complex relationship. Berman and Turk (1981) found that individuals with lower life satisfaction and negative mood states reported coping strategies such as expressing negative feelings as more helpful, compared with individuals with positive mood states. Similar results were found by McCubbin and others (Boss, McCubbin, & Lester, 1979; McCubbin, Dahl, Lester, Benson, & Robertson, 1976). Recently, Aldwin and Revenson (1987) found that negotiation (i.e., problem-focused coping) was related to decreased symptoms when coping effort was perceived as successful. When the coping effort was not perceived as successful, however, use of negotiation increased emotional distress. Thus taken together these studies provide support for the importance of perceived coping effectiveness in understanding the adaptiveness of coping strategies.

Gender and Marital Status

With regard to gender differences, Russell, Altmaier, and Van Velzen (1987) found that male teachers reported greater levels of depersonalization than females; however, Pearlin and Schooler (1978) reported that males were better able to use coping strategies to reduce the impact of work stressors.

Etzion and Pines (1986) found that men report "ignoring the source of stress" significantly more than women, who "talk about the source of stress." Hamilton and Fagot (1988) found no gender differences in utilization of problem solving behaviors for college students. Finally, the meta-analysis of gender differences in occupational stress by Martocchio and O'Leary (1989) also found no gender differences in experienced and perceived work stress. Thus contradictory evidence exists regarding gender differences in work-related stress and coping strategies.

An explanation for gender differences and coping suggested by Etzion and Pines (1986) is that they may be due to stereotypical sex-role differentiation. Women are expected to be open and to confide, whereas men are encouraged to manage on their own (Greenglass, 1982). However, Hamilton and Fagot's (1988) results would not support this contention.

The ability to cope effectively with work stress may also be related to work-place norms. For example, elementary school teaching is a feminine sex-typed occupation (i.e., majority of workers are female). Stereotypical job qualities considered especially suited to men such as higher status, power, prestige, and salaries, jobs requiring competition, action-oriented, and high pressure, and jobs that involve scientific and bureaucratic tasks are notably lacking in elementary school teaching (Broverman, Vogel, Broverman, Clarkson, & Rosenkrantz, 1972). Consequently, it may be that male teachers experience greater stress because, as Bem (1975) postulated, individuals experience greater stress when prevailing sex-role expectations are incongruent with occupational role.

Stressor Types

Researchers have identified significant sources of teacher stress including classroom management, role conflict, relationships with colleagues, and work overload (Friesen & Williams, 1985); political climate, negative public support, and role definition (Ruddy, 1984); interaction with administrators and student pressures (Bartell, 1984). According to Pettegrew and Wolf (1982), previous research on teacher stress viewed the phenomenon from three conceptually distinct points: (a) role-related stress associated with the degree of congruity between the teacher's expectations of his or her teaching role and the actual teaching experiences, (b) task/event stress stemming from a variety of specific tasks teachers perform as part of their teaching duties, and (c) environmental stress stemming from the global school environment. Thus, in this study, all three stressor domains will be included.

Specifically, the purposes of our research were threefold. The first aim was to investigate whether differences in the degree and type of teacher stress and in the perceived effectiveness of different coping strategies were related to gender and marital status of the teachers. Second, because stress and coping are both multivariate concepts, it was of interest to investigate the nature and degree of relationships among teacher stress domains and the perceived effectiveness of different coping types. This would seem to be important because it would appear doubtful that there is only one effective coping strategy for all types of stress. The coping strategies that are per-

ceived as most effective are likely to vary with the type of stress and with the individuals' life circumstances (Ilfeld, 1980; Pearlin & Schooler, 1978). As the consistency of coping effectiveness with different work-related stressors is relatively unexplored, no predictions were made with regard to expected results. Finally, because absenteeism has been found to correlate with psychological and physical distress for teachers (Bridges, 1980; Litt & Turk, 1985), the association between absenteeism and stress and coping was studied.

Method

Subjects and Procedures

The data were collected as part of a large-scale needs assessment conducted by the district school board and the city health department (Long, Schutz, Kendall, & Hunt, 1986). The target group for this study was defined as the population of elementary teachers employed in a metropolitan school district in western Canada. The questionnaire was distributed late September and collected through the regular school district mail delivery system, with the request that it be completed and returned within two weeks. Questionnaires were returned by 879 elementary teachers representing a 51% response rate. The sample appeared to be generally representative of elementary teachers in the district. Demographic characteristics of the sample were 21% males and 79% females, median age of 42 years (range 22 to 64), 57% married, 41% had children at home, 67% had more than 10 years teaching experience, and the median class and school sizes were 21-30 pupils and 300-800 pupils, respectively. After discarding questionnaires with missing data, 781 subjects were retained for analyses.

Measures

The questionnaire had 182 separate items divided into six subsections. Only the subsections used in the present study are described in detail. The first section contained demographic, occupational, and absenteeism information (i.e., total number of sick days taken in the previous year, rated "1-3," "4-10," "11-20," and ">20" sick days).

Stress. Pettegrew and Wolf's (1982) Teacher Stress Measure was used for this study because it was developed from a sound theoretical base and has undergone some initial psychometric analyses. Work-related stress is theorized to arise from three conceptually different sources, resulting in "role-related stress" (how well teachers' expectations of the teaching role fit the actual experience of fulfilling that role), "task/event stress" (tasks teachers must perform), and "environmental stress" (experienced at the organizational level). In addition, Pettegrew and Wolf included two subscales relating to global feelings of well-being at work and surrounding life in general.

Responses to items were on a 5-point Likert-type scale labeled from "strongly disagree" to "strongly agree." Positively phrased items were reverse scored for analyses so that a score of 5 represented a high-stressed (i.e., degree of stress) response for all items. Recent confirmatory factor analysis work by Schutz and Long (1988) has reduced this inventory to 7

factors comprising 36 items. Cross validation with confirmatory factor analysis, reliability analyses, and divergent groups validation indicated that this revised inventory has a theoretically verifiable factor structure, good internal reliability, and support for construct validity. The factors (i.e., type of stress) are labeled as Role Ambiguity (RA, 5 items); Role Stress (RS, 7 items); Organizational Management (OM, 5 items); Task Stress (TS, 6 items); Supervisory Support (SS, 4 items); Job Dissatisfaction (JD, 4 items); and Life Dissatisfaction (LD, 5 items). The internal consistency coefficients (alpha) ranged from .74 for Role Ambiguity to .87 for Role Stress. Subscale scores were found by averaging appropriately reflected item scores.

Coping. Coping refers to any response to a stressor that serves to prevent, avoid, or control psychological distress (Pearlin & Schooler, 1978). Coping type and effectiveness were assessed by responses to an 11-item scale developed for this study. Similar to Lazarus and Folkman's (1984) Ways of Coping Scale format, respondents were asked to identify the most salient work-related stress experienced during the past month and to indicate the degree of perceived effectiveness for only the coping strategies they used. The scale ranges from 1 (ineffective) to 5 (extremely effective). The scale includes items representative of coping subscales identified by other researchers (Billings & Moos, 1981; Lazarus & Folkman, 1984): seeking information, ignoring feelings, problem solving, changing the cause, withdrawal, seeking support, cognitive reappraisal, and four symptom-management strategies (i.e., rest, exercise, recreation, and substance use). In order to best represent the two theoretically identified functions of coping, problem-focused and emotion-focused, only 7 of the 11 items were used to comprise two subscales representing Problem solving (PS) coping and Avoidance (AV) coping. Rest, exercise, and recreation were considered ambiguous regarding PS and AV functions and were not included. The 7 items are presented in Table 1. A confirmatory factor analysis using LISREL VI (Joreskog & Sorbom, 1984) supported this two-factor hypothesis. Unweighted least-squares parameter estimation based on a polychoric correlation matrix yielded an adjusted goodness-of-fit index of .99, and a root mean square residual equal to .04. Furthermore, no residual correlations exceeded .10. These indices when taken together indicated a good fit of the two-factor model to the data.

Analyses

Gender and marital status. The purpose of this set of analyses was to investigate whether differences in the degree of stress and in the perceived effectiveness of the different coping strategies are associated with gender and marital status. The two measures of coping effectiveness were determined by the averaged item scores on the Problem Solving and Avoidance subscales. Differences among the subgroups were tested using a gender by marital status (2 x 2) MANOVA with Problem Solving and Avoidance as the dependent variables. For this study, the two levels of marital status were single (i.e., unmarried, divorced, separated; $n=315$) and married ($n=442$). There were few teachers who responded in other ways (e.g., common law, $n=24$). These teachers were not included in the analyses. MANOVAs were

Table 1
Factor Loadings and Items for the Coping Strategies ($n = 781$)

Factor	Loading	Item
Problem Solving	.53	Seek more information
	.63	Problem solving
	.57	Ask others for help
	.58	Attempt to change the cause of stress
Avoidance	.53	Act the opposite of the way you feel
	.73	Drugs, smoking, or alcohol
	.65	Withdrawal from situation

done separately for the two coping strategies and the seven stressor variables. The level of significance for both the multivariate test statistic and the follow-up univariate tests was .05.

Relationship between stress and coping. This set of analyses set out to investigate the nature of the relationships between the stressors and the coping strategies. Of particular interest were two questions: (a) What is the nature and strength of the relationships among the stressors and the coping strategies *within* the four subgroups used in this study (married and unmarried females, married and unmarried males)? (b) Are the coping-stress relationships similar across the four subgroups?

These questions were addressed by using multisample multivariate regression analyses with LISREL VI. In these analyses, each of the seven types of stress was regressed on each of the coping strategies. This procedure differs from the multiple regression framework where seven independent regressions would be calculated. In multivariate regression, regression coefficients are estimated accounting for the correlations among both the independent and the dependent variables. This procedure yields regression coefficients which measure the relationship between two variables *after the effects of other variables in the equation have been taken into account.* The standardized scores of each variable were used to control for scale differences among the variables and to thereby enable a comparison among the various regression coefficients. By constraining the regression coefficients in appropriate ways it was possible to test for equality among coefficients between the subgroups. It should be noted that the use of the regression procedures does not imply a direction or causal order. The size and direction of the coefficients, which indicate the relationship among stressors and coping strategies, are of interest.

Specifically, the two research questions were investigated in the following way. In each of the four subgroups, the correlation matrix among all stressors and coping strategies can be described by a model which includes, among other parameters, regression coefficients indicating the stress-coping strategy relationships. A chi-square goodness-of-fit testing the hypothesis that the same stress-coping regression coefficients are common across all subgroups

is possible; however, it is sensitive to sample sizes and thus should be used in conjunction with other measures of fit. Therefore, in this study, the validity of the hypothesis was assessed by using two criteria—the chi-square goodness-of-fit statistic and the magnitude of the residual correlations. In analyzing the residuals we adopted McDonald's (1985) general strategy that, with moderate original correlations, a residual correlation between two variables greater than $\pm.10$ is indicative of the regression model failing to adequately explain the relationship between those two variables. If the regression model did not adequately explain the relationships among the variables then, using the information in the residual correlations as a guide, some equality constraints between coefficients were removed and a revised hypothesis was tested. A regression model was assessed to adequately explain the stress/coping relationships in the data when there were no residual correlations greater than $\pm.10$.

Large differences in the sample sizes in the four groups dictated a slight modification of the analytic strategy. Because the subgroups relating to females were large and relatively equal ($n=266$ for single females and $n=356$ for married females) compared to the subgroups for males ($n=49$ for single males and $n=86$ for married males), the two female groups and the two male groups were compared separately. Analyzing all four groups simultaneously would have biased the estimates of the regression coefficients toward the female data and would have also resulted in a misleading chi-square goodness-of-fit test.

Relationship among stress, coping, and absenteeism. We were interested in whether there was a relationship between absenteeism and the various stressors or coping strategies. Absenteeism was the total number of days absent from work in the preceding year. For the purposes of this analysis, teachers were classified into one of two groups based on whether they had been absent no more than three days. The dichotomization on this variable was done to make the sample sizes more equal. Some support for the validity of the absenteeism data was provided by an analysis that indicated that a greater proportion of individuals with three or less days absent reported their health as excellent, and a greater proportion of individuals with greater than three days absent reported their health as very poor or below average, $\chi^2(3, N=799)=32.2, p<.01$ (i.e., "Compared to other persons your age, how would you rate your health" on a 4-point scale from very poor to excellent?). A MANOVA was performed for the stress and coping variables separately. The level of significance of both the multivariate test and the univariate follow-up ANOVAs was set to be .05.

Results and Discussion

Gender and Marital Status

The results from the MANOVAs using the work-related stressors and the coping strategies are summarized in Table 2 which indicates that there are significant differences in the degree of perceived stress for both the marital status and gender main effects but not for the interaction. The follow-up univariate ANOVAs suggest that there are gender differences on role stress,

supervisory support, job and life dissatisfaction. In all cases males feel more stressed than do the females (see means in Table 3). Similarly, unmarried teachers feel more stressed as compared to married teachers on role stress and life dissatisfaction.

With regard to coping, an examination of Table 2 reveals significant differences in the perceived effectiveness of the coping strategies for gender, but not for marital status or the gender by marital status interaction. Again, looking at the univariate *F*s and the means in Table 3, females indicate that problem solving techniques are more effective than do males, whereas males indicate that avoidance coping techniques are more effective than do females. However, for both males and females, from an examination of the means it is apparent that problem solving coping is perceived to be more effective than avoidance coping.

These results tend to support Etzion and Pines' (1986) finding that men and women report different coping strategies corresponding with stereotypical sex-role differentiation. The greater perceived efficacy of problem-focused coping of female teachers compared to male teachers (i.e., seeking information, asking for help, problem solving, and attempting to change the stressor) may result in both socioemotional provision of understanding and instrumental provision of assistance—the consequence of which is less perceived stress for the women. However, an alternate explanation for greater

Table 2
Multivariate and Univariate Tests of Marital Status and Gender on Stress and Coping Strategies ($n = 757$)

Status	Marital Status		Gender		Marital x Gender
Multivariate *F*	5.41		4.07		0.98
$p <$	0.01		0.01		0.45
Univariate*	*F*	$p <$	*F*	$p <$	
Role Ambiguity	0.03	0.86	1.30	0.26	
Role Stress	4.41	0.04	9.83	0.01	
Org. Management	3.27	0.08	1.63	0.21	
Task Stress	0.01	0.92	3.05	0.09	
Supervisory Support	0.58	0.45	8.85	0.01	
Job Dissatisfaction	1.56	0.22	13.02	0.01	
Life Dissatisfaction	25.15	0.01	16.12	0.01	
Multivariate *F*	2.31		8.20		0.27
$p <$	0.10		0.01		0.77
Univariate*			*F*	$p <$	
Problem Solving			4.29	0.04	
Avoidance			8.66	0.01	

*Univariate tests are inappropriate if nonsignificant multivariate *F*.

Table 3
Means (Standard Deviations) of Stress and Coping Variables

Stress[a]		Single ($n = 315$)	Married ($n = 442$)
RA	Male	2.12 (0.83)	2.11 (0.76)
	Female	2.11 (0.76)	2.03 (0.67)
RS	Male	2.73 (0.80)	2.54 (0.72)
	Female	2.46 (0.76)	2.33 (0.79)
OM	Male	2.34 (0.83)	2.22 (0.72)
	Female	2.26 (0.68)	2.13 (0.65)
TS	Male	2.94 (0.77)	3.02 (0.69)
	Female	2.88 (0.80)	2.82 (0.73)
SS	Male	2.26 (0.72)	2.22 (0.74)
	Female	2.06 (0.73)	1.99 (0.74)
JD	Male	2.56 (0.87)	2.54 (0.70)
	Female	2.37 (0.71)	2.22 (0.70)
LD	Male	2.52 (0.93)	2.10 (0.71)
	Female	2.17 (0.72)	1.88 (0.69)
Coping Strategies[a]			
PS	Male	2.94 (0.84)	2.94 (1.13)
	Female	3.22 (0.96)	3.07 (1.07)
AV	Male	1.63 (1.09)	1.42 (1.10)
	Female	1.35 (0.92)	1.15 (0.95)

[a]Higher the scores greater the stress or coping effectiveness.
Note: RA = Role Ambiguity, RS = Role Stress, OM = Organizational Management, TS = Task Stress, SS = Supervisory Support, JD = Job Dissatisfaction, LD = Life Dissatisfaction, PS = Problem Solving, AV = Avoidance.

male stress may be found in Bem's thesis (Bem, 1975; Page, 1987) that greater stress is experienced when prevailing sex-role expectations are incongruent with occupational role.

An examination of the items on the supervisory stress scale also implicates sex-role differentiation. The items reflect inadequate communication

with the school principal (e.g., doesn't listen, doesn't pay attention), as well as lack of support (e.g., doesn't support teacher in conflicts with parents or outsiders). Possibly, male teachers, due to sex-role constraints, do not admit they have problems and do not seek support by asking the principal or others for help. It appears that sociocultural beliefs defining the appropriateness of occupational behavior for men and women need to be examined and considered when developing stress-management programs for elementary teachers.

Similar to other studies (Cooke & Rousseau, 1984; Holt, Fine, & Tollefson, 1987), marital status differences revealed that unmarried teachers feel more stressed than do married teachers on role stress and life dissatisfaction. However, there were no differences in the perceived effectiveness of problem solving or avoidance coping strategies for married or unmarried teachers. One could speculate that greater role stress experienced by unmarried teachers, compared to their married co-workers, is related to the salience of organizational demands due to the economic meaning of work-related events in their lives (Brief & Atieh, 1987). Other research on stress and social support suggests that the support system implied by family roles (e.g., husband, wife) can moderate the impact of work-related stressors (LaRocco, House, & French, 1980).

Relationship Between Stress and Coping: Females[2]

Similar stress-coping relationships (as indicated by the equal regression coefficients) were found in both the single-female and married-female groups ($\chi^2(14)=13.19, p=.51$). Furthermore, neither group had any residual correlations that exceeded ±.10. The regression coefficients are displayed in Table 4. It is clear from this table that there is a consistent inverse relationship between problem solving coping and the stressors indicating a general trend that greater perceived effectiveness of problem solving coping is related to less stress. Interestingly, this relationship is the strongest between problem solving and life dissatisfaction. The relationships between avoidance coping and the stressors also show a consistent pattern; however, they are in the opposite direction. It appears that female elementary teachers who experience more stress also find avoidance coping to be effective. It should be cautioned at this point that the strength of the relationships are not strong (i.e., regression coefficients are all less than .30) and one should be careful not to overgeneralize these results. Nonetheless, these coefficients are consistent and are all significant for both groups (t-values greater than 2.00 as calculated by LISREL VI).

Relationship Between Stress and Coping: Males

The results of the analyses comparing the single-male and married-male teachers were not as straightforward. The initial chi-square test assessing the equality of the regression coefficients between the two groups yielded nonsignificant results, indicating that the same model is plausible for both groups ($\chi^2(14)=9.21, p=.82$). After examining the residuals, however, it was found that there were several important relationships in the single-male group that were not adequately explained. For example, the residual correla-

Table 4
Regression Coefficients for Stress and Coping Variables

	Females		Males			
	Single and Married ($n=266$) ($n=356$)		Single ($n=49$)		Married ($n=86$)	
Stress[a]	PS	AV	PS	AV	PS	AV
RA	−.10	.18	−.32	.46	−.28	.46
RS	−.12	.25	−.31	.38	−.08	.38
OM	−.11	.13	−.28	.36	−.08	.36
TS	−.15	.21	−.36	.40	−.19	.40
SS	−.12	.16	−.42	.30	−.29	.30
JD	−.17	.15	−.48	.29	−.23	.29
LD	−.27	.22	−.47	.29	−.15	.29

[a]see Table 3.

tions between problem solving and each of role ambiguity, organizational management, job dissatisfaction, and task stress were all greater than ±.10. Based on these findings it was decided to attempt to fit a new model in which the regression coefficients describing the problem solving relationships could differ between single and married males. This model again yielded a nonsignificant test statistic ($\chi^2(7)=1.36$, $p=.99$) but, more important, none of the residual correlations in either group was greater than ±.10. These regression coefficients are presented in Table 4.

The pattern of results is similar to those of the two female groups. Problem solving and avoidance coping are negatively and positively related, respectively, to the seven stressor variables. However, there is a large difference in the strength of the relationships (i.e., stronger relationships exist for the males). If we first consider the avoidance-stress relationships, it is clear that there are consistent and fairly strong relationships between avoidance and all of the stress variables for both single and married men. It is also interesting to note that the strongest relationships are with the specific work-related stressors (i.e., role ambiguity, role stress, organizational management, and task stress).

One interesting difference between single and married male teachers is that of the problem solving life dissatisfaction relationship (regression coefficient=−.47 and −.15 for single and married males, respectively). While these results are interesting, they are based on relatively small samples of single ($n=49$) and married ($n=86$) males due to the majority of female teachers in the elementary school system. It would be desirable to replicate these analyses with a larger sample.

Females and Males Compared

A comparison of males and females indicated that despite males finding avoidance coping to be more effective than did females and the opposite being true for problem solving coping, the relationship between coping and stress was generally in the same direction for both groups. The greater the perceived effectiveness of problem solving coping the less stress. These findings may account for some of the inconsistencies in the literature, that is, although type of stressors and copy strategies may vary by gender (e.g., Etzion & Pines, 1986; Russell et al., 1987), the relations of stress and coping effectiveness by gender are similar (e.g., Hamilton & Fagot, 1988).

With regard to gender and marital status, perceived effectiveness of problem solving strategies was associated with less stress for all stressors for both married and single females and was the strongest for life dissatisfaction and the weakest for role ambiguity. A different pattern emerged for males, depending on whether they were married or single. The problem-solving-stress relationship was stronger for single males, especially for job and life dissatisfaction. An examination of the subdomain means and standard deviations revealed that single men were more variable in their responses than were married men, especially in their responses to life dissatisfaction. This fact may account for the stronger problem-solving-stress relations for single men. In contrast, single and married women responded with greater similarity. The consistency of women's responses may be due to the predominance of female teachers in elementary schools and is in keeping with Bem's (1981) thesis that stress and coping is a function of the consistency between sex-role expectations and occupational role demands.

Relationship Among Stress, Coping, and Absenteeism

It is clear from Table 5 that there is a significant relationship between the total number of sick days taken and the stressors. There are differences in the two levels of absenteeism on role ambiguity, role stress, task stress, and job dissatisfaction. After examining the means in Table 6, it appears that the teachers who were absent not more than three days in the past year had lower self-reported stress. It should be noted that the differences in the means are not large but they are consistent in their direction. There were no differences in the perceived effectiveness of the coping strategies between the two levels of absenteeism ($F(2,778)=2.90, p<.06$).

The finding that absenteeism was not related to scores on the coping factors was unexpected because this study and others have found that teachers' reports of absences were significantly correlated with stress, and that stress and coping were related (Litt & Turk, 1985). While the differences in the perceived effectiveness between the two levels of absenteeism were not large enough to be significant ($p<.06$), an examination of the means revealed that greater absenteeism was associated with greater perceived effectiveness of avoidance coping and less effectiveness of problem solving coping. It could be that the absenteeism measure in this study was not sensitive enough to detect these relationships. For example, Kyriacou and Sutcliffe (1979) report that teachers consistently underestimate the number of their absences in the

Table 5
Multivariate and Univariate Tests of Differences in Absenteeism on Stress and Coping

	Stress $n=776$		Coping $n=781$
Multivariate F	3.62		2.90
$p <$	.01		.06
Univariate*	F	$p <$	
Role Ambiguity	5.07	.03	
Role Stress	9.58	.01	
Org. Management	1.27	.26	
Task Stress	5.19	.03	
Supervisory Support	0.67	.42	
Job Dissatisfaction	14.47	.01	
Life Dissatisfaction	3.75	.06	

*Univariate tests are inappropriate if nonsignificant multivariate F.

Table 6
Means (Standard Deviations) of Stress and Coping Variables by Absenteeism

	Sick Days	
	0-3	>3
Stress	($n=427$)	($n=349$)
Role Ambiguity	2.04 (0.66)	2.15 (0.73)
Role Stress	2.35 (0.75)	2.52 (0.80)
Organizational Management	2.18 (0.67)	2.23 (0.70)
Task Stress	2.82 (0.77)	2.96 (0.72)
Supervisory Support	2.08 (0.72)	2.04 (0.73)
Job Dissatisfaction	2.24 (0.68)	2.44 (0.79)
Life Dissatisfaction	2.00 (0.73)	2.11 (0.76)
Coping Strategies	($n=431$)	($n=350$)
Problem Solving	3.13 (1.01)	3.04 (1.05)
Avoidance	1.23 (0.92)	1.35 (0.95)

school year. Furthermore, absenteeism may not only be a reflection of the negative health consequences of high stress, but may also be a form of coping reflecting either function, problem solving, or avoidance. Absenteeism may be a way of avoiding stressors or it may facilitate problem resolution, for example, by providing time for class preparation. A closer examination of absenteeism is necessary in order to determine its role in the stress coping process.

Summary and Conclusions

A major issue raised by this research concerns the extent to which the type and effectiveness of coping strategies were consistent across subgroups and stressors. Although the relationships were modest, the most consistent finding across both gender and marital status and stressors was the positive relationship between the perceived effectiveness of avoidance coping and the degree of stress for all the stressors. These relations parallel those found by others (Berman & Turk, 1981; Boss et al., 1979; McCubbin et al., 1976; Pearlin & Schooler, 1978), that is, greater distress was related to greater reported coping effectiveness for avoidance strategies (e.g., acting the opposite of the way you feel, using drugs or alcohol, smoking, withdrawing from the situation). Furthermore, the finding that greater perceived effectiveness of problem-focused strategies is related to less stress is consistent with Aldwin and Revenson's (1987) results that particular problem focused strategies were related to decreased symptoms (less stress) when coping effort was perceived as successful.

The greater role stress (i.e., role conflict and overload) reported by males and unmarried teachers is a classic source of stress which has been researched extensively (Ursin & Murison, 1983). Role stress is linked to both mental health and physical outcomes; for instance, individuals whose roles are in conflict experience more tension and are less satisfied with their jobs than are those individuals whose roles do not conflict, a finding that has been replicated across a variety of occupational groups (for a review see Van Sell, Brief, & Schuler, 1981). The patterning of job and life dissatisfaction and role stress found here is consistent with this previous research. However, future research using longitudinal designs and path analysis is required to establish the direction of causality, as these findings are solely correlational and cannot be interpreted in a causal manner. In fact, recent views tend to formulate the cause-effect relationships between stress and coping variables as circular (Lazarus & Folkman, 1984). However, regardless of cause and effect, it appears that a positive relationship between perceived coping efficacy and stress might still reflect the maladaptiveness of this behavior, whereas a negative relationship might reflect effectiveness.

A limitation of major concern is the cross-sectional nature of the study; the data reflect elementary teachers' stress at a particular point in time. Thus longitudinal studies need to be carried out to determine whether the particular stressors and coping strategies described here are stable or simply artifacts of the particular time the survey was administered. Furthermore, the survey is based entirely on self-report information.

Although the relationships reported here are modest, the findings have a number of implications for future research. As noted earlier, gender and marital status are related to stress and coping strategies, and perceived effectiveness of coping is differentially related to degree of stress. It would be important to determine whether the impact of coping varies systematically at different levels of situational stressfulness (i.e., main effects or buffering effects). Research is also necessary to determine the effects sex-role orientation, occupational stereotyping, and differential work salience have on teacher stress and coping behaviors. Future research should directly examine frequency of coping and its perceived efficacy to test the role of coping in the maintenance of maladaptive responses and the specific effect of directly altering coping within therapeutic interventions (cf. Long & Haney, 1988; Martelli, Auerbach, Alexander, & Mercuri, 1987).

Notes

1. Listing of authors was determined by a coin toss as authorship is shared equally.
2. Correlation matrices are available from the authors, Counselling Psychology Department, 210 5780 Toronto Road, University of British Columbia, Vancouver, BC V6T 1L2.

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Career Progress and Satisfaction Among Canadian Academics

Career progress and satisfaction of Canadian academics were investigated. A questionnaire was sent to a stratified random sample of academics, numbering 997, with a return rate of 44.8%. Descriptive data were reported using percentages and comparisons using chi squares. While the percentage of academics satisfied with career choice was high (80.7%), 34.7% of the respondents would consider a career change at this time. Comparisons by gender, rank, desire for change, and preferred professional activities were presented, as well as perceived positive and negative aspects of working in universities. The results were related to Hill's (1986-1987) expansion of Herzberg's (1968) two-factor approach to job satisfaction and dissatisfaction.

In the last decade, many descriptive studies of academics have appeared in the literature. In particular, these data most frequently have related to academics in the United States (e.g., "Who Faculty," 1985) and often have represented specific professional groups (e.g., psychologists in studies such as Pyke, 1977; Russo, Olmedo, Stapp, & Fulcher, 1981).

According to the United States data, gender, rank, highest degree, productivity, years in service, and administrative roles are interrelated (Astin & Bayer, 1972). Much of the literature focuses on gender. Several studies have reported that women cluster in the lower ranks (Anderson, 1974; Hill, 1984; Kimmel et al., 1974; Russo et al., 1981), are underrepresented in faculties of universities and in administration (Brooks, 1983; Russo et al., 1981), and are less likely than are men to have had or served as mentors (Lincoln, 1986). Patterson, Sutton, and Schuttenberg (1987) noted a relationship between rank and mobility. Astin (1972) observed that women are more likely than men to move from academic to nonacademic settings. Lincoln (1986) attributed this to social pressures which make it easier for women than for men to release their commitments to the professoriate, even after tenure is granted.

Pyke (1977) reviewed both Canadian and United States data in her article on female psychologists. She indicated that women tended to have heavier teaching loads, more interest in teaching, and smaller classes than did men. They also held lower ranks and fewer doctoral degrees than did men. Pyke pointed out that discrimination against females may relate to socialization of men and women in terms of traditional sex roles.

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Discrimination in hiring more men and paying them more than women has been noted by Lincoln (1986) and Tolbert (1986). It would seem that if productivity could be shown to be lower for females than males, the hiring and salary differences could, at least in part, be justified. However, Tolbert indicated that although claims have been made that male academics are more productive than are females, productivity differences disappear when disciplines and types of institutions are controlled.

General work satisfaction and its sources have been studied. Hill (1984) indicated that there are few differences in job satisfaction related to gender. Diener (1984), Pearson and Seiler (1983), and Barrett, Barrett, and Shanker (1983) found that involvement in teaching was rated as one of the most important sources of satisfaction among academics. Other sources of satisfaction were stimulation and personal growth (Diener, 1984), research (Pearson & Seiler, 1983), flexibility in schedules and autonomy (Diener, 1984), and collegial relationships (Barrett et al., 1983).

The greatest dissatisfaction appeared to be in the younger and lower ranks (Hill, 1984) and among the least mobile (Patterson et al., 1987). Dissatisfaction with academic work has been attributed to low salaries (Diener, 1984; Pearson & Seiler, 1983), working conditions and facilities, workload, and lack of recognition (Pearson & Seiler, 1983).

A study by the Carnegie Foundation (cited in "Who Faculty," 1985) indicated that 52.1% of the United States academics surveyed would seriously consider a reasonable offer for another academic appointment, and that 47.0% would consider a reasonable offer in a nonacademic area. Nearly one fourth of those surveyed were reported to be considering entering another type of work. The reasons given were related to job dissatisfaction and salaries indicating a "deeply troubled profession" (Jacobson, 1985a). Jacobson (1985b) stated that 45% of the academics in the Carnegie study would not recommend the professoriate to young people wishing to start a career. This was related to uneasiness of faculty members with regard to a perceived decline in academic standards and the erosion of job security, limited prospects for advancement, and personal stresses related to work.

Barrett et al. (1983) have attributed dissatisfaction to the perceived discrepancy between an ideal set of circumstances and the realities of academic life. They cited the importance of teaching as an ideal from the academics' points of view, and the lack of institutional importance placed on teaching as a reality, causing low morale.

Much of the literature considers single-factor effects on job satisfaction. Hill (1986-1987) investigated Herzberg's (1968) two-factor approach in relation to academics' satisfaction and dissatisfaction. Herzberg's theory distinguished between job content factors (intrinsic) that contribute to satisfaction, and job context factors (extrinsic) that contribute to dissatisfaction. The research supporting Herzberg's approach has been mainly of the type that employs subjects' descriptions of satisfying and dissatisfying work. As Gibson and Teasley (1973) point out, the validity of the theory has been questioned because support for it may have been contingent on the methodology used. The simplicity of the model has been a source of criticism as well.

Hill (1986-1987) attempted to counter the criticism through use of a Likert-type questionnaire with faculty members from institutions of higher education. Factor analysis of the data produced six dimensions. Factor correlations indicated that there were two groups of three that were moderately related (.41 to .61) while the means of the two groups were significantly different ($p<.01$). Hill described the two groups as intrinsic and extrinsic, relating them to Herzberg's theory. Within the groups the dimensions found were (a) intrinsic—teaching, recognition-support, and convenience; and (b) extrinsic—administrative, economic, and collegial. He recognized the limitations of this sample, but maintained that, to the extent that Pennsylvania academics were representative, the two-factor theory can be applied to institutions of higher education. Further investigation of Hill's contention seems necessary.

As well, recent articles in the *CAUT Bulletin* expressing concerns of Canadian academics with regard to gender equity (Casey, 1986; Schrank, 1989; Warren, 1986); security and tenure (Walker, 1983); need for career alternative programs (Renner, 1989); and impact of underfunding (Balzarini, 1989; Pfaffenberger, 1989) which are related to the satisfaction and dissatisfaction dimensions proposed by Hill (1986/1987) seem to indicate that research on Canadian academics' career satisfaction is both warranted and timely.

Purposes of the Study

The purposes of this study were:

1. To describe the types of activities engaged in by Canadian academics in relation to their preferences and institutional priorities.
2. To compare level of general satisfaction of Canadian academics as measured by possibility of career change with choice of career and career progress.
3. To determine positive and negative aspects of working in universities as stated by Canadian academics.
4. To determine to what extent gender and rank relate to career satisfaction and progress, and to types of activities in which Canadian academics engage.

Method

A questionnaire was designed to provide information about the following: (a) the type of activities in which Canadian academics engage in relation to their preferences and institutional priorities; (b) the level of general satisfaction with career choice and progress; (c) the perceived positive and negative aspects of working in universities; and (d) the extent to which gender, age, rank, and income relate to career satisfaction and to types of work activities. The questionnaire was prepared in French and English forms.

A stratified random sample of 997 Canadian academics was selected from the 1987 university calendars, representing the provinces by proportion to the overall number of academics employed (Statistics Canada, 1985). Each subject received a questionnaire, a cover letter asking for participation, and

a return envelope. Academics working in Francophone universities received a French translation of the questionnaire and the letter.

A total of 447 questionnaires were returned. The responses were coded and cross tabulated. Percentages and chi squares were calculated and Yates corrections were applied where necessary using SPSS-x.

Results and Discussion

Questionnaires were returned by 447 academics, of whom 18.6% were women and 80.1% were men which compares favorably with the percentages (83% males and 17% females) given by the Association of Universities and Colleges of Canada (1984). The median age for the total group was 46 years. Most were married (75.8%) with three or fewer children living at home. Doctoral degrees had been earned by 76.1% of the group. Ninety-seven percent of the group were employed as full-time faculty members. There were 20.8% French questionnaires returned which is close to the 19.8% included in the initial sample. The ranks of associate professor (39.0%) and full professor (39.5%) were the most commonly held with 21.4% in the lower ranks. This was consistent with the Association of Universities and Colleges (1984) citation of 34% full professors, 36% associate professors, 20% assistant professors, and 10% others. The median number of years of university teaching was 16 with a median of 13.9 years in their present positions. Tenure had been granted to 81.1% with 50.4% being tenured for more than 10 years. The median salary was $48,526.

Care must be taken when comparing the sample of this study with that of the Carnegie study (Jacobson, 1985a, 1985b; "Who Faculty," 1985) on United States college and university faculties. While the age range and the percentage of married faculty members appear to be similar, differences in other aspects of the sample are apparent. The United States sample had fewer in the upper ranks (58.6%), tenured (69.5%), and holding doctorates (57.5%). There were more females (27.0%) than in this study (18.6%). The median salaries for United States academics (US$28,000-$30,999) were lower but cannot be used in comparisons because of the 1985 date of the Carnegie study.

When asked to identify the single activity that took the greatest amount of time in their present positions, 51.8% named teaching, with research at 25.7%. Teaching (43.5%) and research (49.8%) were most frequently chosen as the most important activities from a personal standpoint while 83.3% named research and/or other professional production as the most important source of evidence for decisions about tenure in their faculties.

It is interesting to note that percentages of time spent and personal importance given to an activity do not match the institutionally important activity percentages. In fact, 46% of the sample spent the greatest amount of time on activities other than those deemed most important personally. This may be a source of dissatisfaction as cited by Powell, Barrett, and Shanker (1983). If a person is assigned a workload involving a high percentage of time teaching, little time for research can be taken. Hill (1984) would anticipate that inconsistencies in expectations related to promotion, tenure, and general policy (external administrative dimension) would be a source of

dissatisfaction. However, some reduction in the stress caused by this might be expected in the current sample due to the high percentage of already tenured academics in the upper ranks.

Several questions dealt with working closely with colleagues and students. Many (70.9%) had had a colleague who had acted as a mentor to them when they began their careers. As well, 76.6% stated that they act as mentors to their younger colleagues "sometimes" or "often." Collaboration with colleagues on professional production was quite frequent with only 15.8% stating that they never collaborate. Collaboration with students on professional production was quite common also (62.4% in the "sometimes" and "often" categories). Instruction with colleagues had been experienced by 63.7% of the group. Generally, evidence of close working relationships with colleagues and students was found.

When asked about time spent on administrative committees as compared with others with similar positions, 45.6% stated that they were above the average. When graduate committees were considered, 27.9% stated that they felt they spent more than the average amount of time. Many wrote comments indicating that there were no graduate students in their departments. Obviously a question on graduate/undergraduate offerings would have given a clearer indication of the working conditions represented here.

When salary was rated in comparison to others in similar positions, 19.9% indicated that they believed their compensation to be below the average. Above average salaries were reported by 16.5%.

The general level of satisfaction with career chosen was rated on a five-point scale. Those rating their feelings about choice of career as "satisfied" or "very satisfied" were 80.7% of the respondents, while 14.9% were "dissatisfied" or "very dissatisfied." When asked about career progress, 63.3% were satisfied or very satisfied while 13.9% were dissatisfied or very dissatisfied. Over 46% of the respondents reported that they had worked in more than one institution; of those, 53.8% had moved for greater professional opportunities. The percentage of respondents who would consider a career change at this point was 34.7%.

The Carnegie data (cited in "Who Faculty," 1985) indicated that 20.1% of their sample often wished they had entered another profession. Forty-seven percent stated they would consider a reasonable offer in a nonacademic position, while 52.1% stated that they would consider another academic position. While the data from this study do not indicate as high a percentage of dissatisfaction or consideration of career change as did the United States study, the percentages found are sufficiently high to cause concern, especially when consideration is given to the high proportion of faculty members who by their ranks appear to have been successful in university faculties.

Faculty members were asked to state three major positive attributes of their work situation and three distressing aspects. The answers were categorized and tallied. Those listed below appeared on 12% or more of the questionnaires. The five most common positive attributes listed were (a) freedom, independence, or autonomy; (b) working with students; (c) collegial support and interaction; (d) research opportunities; and (e) stimulation and

personal growth. The six most common negative aspects were (a) administrative problems and lack of support; (b) lack of grants and funds; (c) workload; (d) hours and time pressures; (e) bureaucratic details; and (f) committee assignments. The positives and negatives are listed in order of highest to lowest occurrence with bureaucratic details and committee assignments named equally often in the negative category.

When compared with the two-factor model of Hill (1986-1987), the collegial support and interaction dimension is more of a positive aspect of the respondents' work life than would have been predicted. The other dimensions mentioned by the respondents seem to fit Hill's prediction that faculty members experience satisfaction with intrinsic factors and dissatisfaction with extrinsic factors related to their work.

Cross tabulations were used to compare the answers on the questionnaires with language of instruction, gender, rank, consideration of career change, and time spent doing preferred activities. Chi squares were computed (see Table 1) as were percentages. Statistically significant results ($p < .05$) are discussed below.

The responses of academics from Francophone and Anglophone universities were compared. There were no significant differences in age, gender, rank, year at rank, or salaries. The Anglophone group reported having mentors, holding PhDs, serving on administrative committees, and rating salaries below average more frequently than did the Francophones. More Francophones than Anglophones were tenured.

There were no differences between the groups in satisfaction with chosen career or progress. It is interesting to note than 37.3% of the Anglophone respondents would consider a career change at this time, while only 24.0% of the Francophones would do so. Considering the possible factors related to this difference, one might speculate that lack of tenure and below average salaries account for a portion of the finding. Perceptions of potential for mobility were not investigated, nor were the careers to which the respondents would consider moving.

Content analyses of responses indicating positive and negative aspects of working in universities produced few differences between Francophones and Anglophones. The groups did not differ in the positive aspects that were listed. They were as reported for the total sample. Some differences in the negative aspects did occur. In the Francophone group, the negative aspects most frequently stated in order of frequency were (a) lack of collegial support and interaction, (b) administrative problems and lack of support, (c) workload, (d) lack of resources, (e) low salaries, and (f) lack of recognition for teaching. Low salary and lack of recognition for teaching occurred equally frequently. The Anglophones listed the following: (a) administrative problems and lack of support, (b) workload, (c) lack of grants and other research funds, (d) low salaries, and (e) number of committee assignments.

As in much of the literature on gender of academics, a greater proportion of women than men had part-time appointments, lower ranks, less time since tenure, fewer years of employment, lower degrees, and lower salaries. They tended to rate their salaries as "below average" for others with similar

Table 1
Statistically Significant Differences ($p < .05$) in Language of Instruction, Gender, Rank, Consideration of Career Change, and Time Spent in Preferred Activities

Category	df	*N*	χ	Direction
Language of instruction				
Mentors	1	446	5.30	More Anglophones than Francophones
Administrative committees	2	425	16.49	More committees for Anglophones
Salary rating	2	429	6.93	More below average for Anglophones
Career change	1	432	4.79	More Anglophones would change
Tenure	1	444	4.02	More Francophones tenured
Married	2	435	8.53	More Francophones married
Gender				
Full vs. part-time	1	439	4.75	More women than men part-time
Rank	3	433	18.98	More women than men in lower ranks
Time tenured	5	349	14.45	Men tenured longer than women
Time employed	7	430	21.56	Men employed longer than women
Degrees held	4	431	11.59	More men with doctorates than women with doctorates
Salary	9	431	33.76	Women earn less than men
Salary rating	2	423	22.06	Women rate salaries below average more often than men
Mentors	2	436	12.00	Women more often mentors than men
Married	2	433	25.23	More married men than married women
Discrimination	5	420	100.98	Women cite more discrimination than do men
Rank				
Mentors	6	433	16.36	Assistant professors least likely to be mentors
Collaboration with students	6	426	28.28	Full professors are most likely
Instruct with colleagues	6	435	15.15	Lecturers least likely, full professors most likely
Salary	27	427	338.54	Upper ranks get higher salaries
Salary rating	6	422	48.04	Full professors rate salaries average and above most often

Table 1 (continued)

Category	df	*N*	χ	Direction
Career satisfaction	18	433	65.48	Upper ranks most satisfied
Progress satisfaction	15	431	128.33	Full professors most satisfied, lecturers least
Career change				
Rank	3	423	13.11	Lecturers most likely, full professors least
Progress satisfaction	5	426	38.46	Satisfied related to no change
Career satisfaction	6	428	87.78	Satisfied related to no change
Grad. supervision	2	395	15.30	Above average number related to no change
Admin. committees	2	411	6.06	Above average number related to no change
Collaboration with students	2	421	11.37	More collaboration in no change group
Time spent on preferred activities				
Tenured	1	444	4.30	Fewer tenured in Group I
Rank	3	438	10.67	More at lower ranks in Group I
Time in rank	5	437	12.10	Group I longer at rank
Salary	9	436	24.89	Lower salaries in Group I
Length of employment	7	435	14.76	Less time in profession for Group I
Mentors	2	442	8.72	Less likely to act as mentor in Group I
Instruction with colleagues	2	444	8.45	Less likely to instruct with colleagues in Group I

positions in their institutions as well. Discrimination was cited more frequently by women (30.4%) than by men (22.6%) with sexual discrimination ranking as the most frequent type (36% of the responses).

Women's comments about the positive aspects of their work fell into the same four most frequent categories as did men's: (a) freedom, independence, autonomy; (b) working with students; (c) collegial support and interaction; and (d) stimulation and personal growth. The fifth category was research for men and flexible schedules for women. The four most frequent categories for negative aspects about work were alike for women and men. They were (a) administrative problems and lack of support, (b) lack of grants and funds, (c) workload, and (d) negative collegial attitudes. The fifth ranking negative aspect for men was salary while women ranked hours and time pressures, bureaucratic details, and large classes equally often and in fifth position. It is interesting to note that only one woman (1.2%) listed salary as a negative aspect of her work while 52 men (15.3%) did so. The median salary for men was $49,840 while for women it was $44,008.

When cross tabulations were done by rank, it was not surprising to find that full professors were found to be most likely to have been tenured, employed, and in university teaching for the longest amount of time when compared to the other ranks. They also acted as mentors, collaborated with students, spent more time in research, and instructed with colleagues more frequently than did others. The upper ranks reported the highest salaries, with full professors rating their salaries as average or above when compared to others with similar positions in 91.5% of the cases. Associate and full professors were the most satisfied with their positions, and full professors the most satisfied with their progress.

When cross tabulations and chi squares were run with consideration of a career change at this time, lecturers were the groups with the highest proportion of positive responses. Most (80.1%) of those responding positively were male. Perceived discrimination was cited by 32.5% of the group with 11.9% related to promotion and 14.56% related to more than one area. As might have been predicted, satisfaction with career choice and career progress were highly related to lack of consideration of career change. Supervision of graduate students, administrative committee participation, and collaboration with students on professional production were all associated with no consideration of change.

When asked to state three positive aspects of their work, those who would consider a career change listed the following (in order by frequency): (a) freedom, independence, and autonomy; (b) flexible schedules and time to do research; (c) collegial interaction and support; (d) working with students; and (e) stimulation and personal growth. While the faculty members who would consider a change most frequently listed the same positive aspects of their work as did those who would not consider a change, the order was slightly different. Those who would not consider a change when compared to the total did not differ in order by frequency of the aspects listed.

The negative aspects most frequently listed by those who would consider a career change were (a) lack of funds for programs and research, (b)

administrative problems and lack of support, (c) poor collegial interaction and attitude, (d) heavy workload, (e) serving on committees, (f) bureaucratic details, and (g) salaries. Here again, the order by frequency is different from the sample as a whole and from the group which would not consider a change. Also, included with frequencies of 12% or more of those responding are collegial interaction and attitude and salaries which were not listed with such frequency in the total group. Those who would consider a change did not list hours and time pressures as frequently as did the group as a whole. The group which would not consider a change matched the total group in frequently listed negative aspects. Here as in the data cited above, Hill's (1986-1987) interpretation of Herzberg's approach was confirmed except for the inclusion of collegial interaction as positive, and consequently a contributor to satisfaction.

The possible effect of academics spending most of their time on their preferred activities as compared to those spending time on their less preferred activities was investigated. Group I was comprised of those answers to questions about activities in which most time was spent matched their preferences ($n=109$). Group II's time spent did not match with preferences ($n=335$). Cross tabulations and chi squares were run for the two groups. Group I was found to have fewer tenured, more in lower ranks, and longer times at rank than was Group II. Group I had been employed at the university level for a shorter time and made lower salaries than Group II. They were less likely to act as mentors or to instruct with colleagues than were those in Group II. There were no gender differences between the groups. It is interesting to note that the groups did not differ on career progress or general satisfaction, nor did they differ on consideration of career change which might have been expected from the statement of preference involved.

Conclusions

The Canadian academics responding to the questionnaire in this study appeared to be more satisfied with their positions and considered career change in proportionately fewer cases than was reported in the United States sample ("Who Faculty," 1985). The differences may relate to a greater proportion of respondents in the higher ranks in the sample for this study as compared to that in the Carnegie study. A smaller percentage of respondents were women in this study than in the United States data. The pattern of responses reflected the literature on the status of women in academic positions in terms of lower ranks, lower pay, and more perceived discrimination.

Consideration of career change was related to the stated positive and negative aspects of the respondents' working situations. The data seem to support Hill's (1986-1987) model, except in the collegial dimension of the extrinsic category. According to the two-factor theory, when faculty members experience dissatisfaction it is most likely to be concentrated in the extrinsic parts of their experience, while satisfaction is likely to be concentrated in intrinsic areas. The area of collegial support, attitude, and interaction appears both as a strong positive and a strong negative in the current study. It is my contention that there is not a clear enough division

between the collegial dimension (extrinsic) and the recognition-support dimension (intrinsic) to categorize the statements of the subjects in a free response situation. This is consistent with Hill's own description of exceptions in his recognition-support dimension data. Further application and analysis of the model seems warranted. An interview format as a follow-up to questionnaire-generated data might prove quite useful in such a study.

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